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# THE MANAGEMENT

OF

# CHILDREN IN INDIA.

THE

# MANAGEMENT AND MEDICAL TREATMENT

OF

# CHILDREN IN INDIA.

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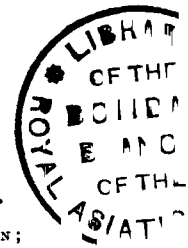


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# PREFACE TO THE THIRD EDITION.

WITH feelings of loyalty and devotion to the Service to which I had the honour to belong for so many years, and many happy recollections of India, which the task has awakened, I have done my best to make this edition trustworthy throughout, and to err rather on the side of caution than otherwise. More than ever, I have tried to convey a simple idea of the principles which should guide the rearing of children in India and the management of their maladies in that country, feeling convinced that the mere enumeration of sets of symptoms and treatments is unsatisfactory, puzzling, and unpractical.

Many important alterations and some additions have been made.

EDWARD A. BIRCH.

BOURNEMOUTH,
*August*, 1894.

## PREFACE TO THE FIRST EDITION.

TOWARDS the close of last year, Messrs. Thacker and Co., of London, did me the honour of requesting me to re-write "Goodeve's Hints for the Management of Children in India." I undertook the task, and the following pages represent my attempt.

It is almost needless to mention that the object of the book remains as heretofore—to instruct as to the rearing of children in India, and to enable the parent to meet the emergencies incidental to child-life in that country—and that it is in no way intended to supplant professional advice.

E. A. BIRCH.

WIESBADEN, 1*st March*, 1879.

## PREFACE TO THE SECOND EDITION.

ALL the practical parts have been carefully revised, a good deal of statistical details omitted, and some new subjects introduced. Professor D. B. Smith having been kind enough to go through the whole text, and Professor de Chaumont to look over the hygienic portions, their suggestions have been gratefully accepted; and the volume is, therefore, issued with much increased confidence. An endeavour has also been made to profit by the suggestions of the reviewers of the former edition.

EDWARD A. BIRCH.

CASTLE PARK, EXMOUTH,
2*nd September*, 1886.

# TABLE OF CONTENTS.

## PART I.

## On the Management of The European Child in Health, in India.

### CHAPTER I.

PAGE

INFANT MORTALITY IN INDIA, AS INFLUENCED BY THE KIND OF MANAGEMENT TO WHICH THE CHILD IS SUBJECTED . 1

### CHAPTER II.

GENERAL EFFECT OF THE CLIMATE UPON THE CHILD'S CONSTITUTION.

When the child should be sent to Europe. Peculiarities of the child's constitution, which render the climate of India obnoxious to its vitality and maturity. The effects of residence in the Hills . . . . . 15

### CHAPTER III.

THE MOTHER'S HEALTH DURING PREGNANCY, AND ITS EFFECTS UPON THE CHILD'S CONSTITUTION SUBSEQUENTLY . . . . . 25

### CHAPTER IV.

MANAGEMENT OF THE INFANT AT, AND IMMEDIATELY AFTER BIRTH.

Section I.—Management during the first day of life. Section II.—Accidents and unnatural conditions which may happen or exist at, or immediately after, birth—still-born—scalp swellings—bleeding from the navel-string—tongue-tied—non-action of the bowels—cleft-palate. Vomiting and purging of blood. Section III. —Management after the first day . . . . 28

## CHAPTER V.

PAGE

ON "NURSING," AND TOPICS RELATIVE TO IT.

The method of nursing. When is a mother unfit to suckle? Selection and management of a wet-nurse. The feeding-bottle. When the mother's milk does not agree . . . . . 43

## CHAPTER VI.

THE GENERAL PRINCIPLES OF DIET AS APPLICABL TO INFANCY AND CHILDHOOD.

Alimentation—milk—quantity, and intervals of feeding—farinaceous foods—intermediate foods—water—filtration 54

## CHAPTER VII.

DENTITION AND GROWTH.

The order, physiology, constitutional effects, and management of teething. Diet after the appearance of the first set of teeth. Growth and weight at different ages . 74

## CHAPTER VIII.

WEANING, LACTATION, SUCKLING.

Section I.—Weaning. Section II.—Too prolonged lactation. Section III.—The results of suckling compared with other methods of rearing . . . . 85

## CHAPTER IX.

ARTIFICIAL FEEDING.

THE METHOD OF ARTIFICIAL FEEDING, AND SOME REMARKS UPON THE DIET OF CHILDHOOD AT DIFFERENT AGES . 91

## CHAPTER X.

ON VACCINATION AND INOCULATION. . . . 104

## CHAPTER XI.

GENERAL HYGIENE.

Section I.—Clothing. Section II.—Exercise and sleep. Section III.—Ventilation, light, and bathing . . 110

## PART II.

## The Nature, Mode of Spreading, Prevention and Detection of the Illnesses of European Children in India.

CHAPTER XII.

PAGE

THE NATURE OF THE SICKNESSES WHICH MOST PREVAIL, CONSIDERED.

(1) According to season, and (2) according to age . 123

CHAPTER XIII.

ON THE SPREADING OF DISEASE, INFECTION, AND DISINFECTION . . . . . 134

CHAPTER XIV.

THE CAUSES AND PREVENTION OF THE MORE COMMON DISEASES.

Atrophy, Malaria, Cholera, Eruptive Fevers, Whooping-cough, Dysentery and Diarrhœa, Heat Apoplexy, Ophthalmia, Convulsions, Worms, Domestic Quarantine 141

CHAPTER XV.

THE EXAMINATION OF SICK CHILDREN.

Demeanour and Expression, Bowels, Urine, Vomiting, Pulse, Chest, Temperature, &c. . . . . 157

---

## PART III.

## The Management of the European Child in Sickness in India.

*DIVISION I.—ON FEVERS.*

CHAPTER XVI.

ON FEVER GENERALLY.

Its nature, treatment, and classification . . . 170

## CHAPTER XVII.

PAGE

(1) THE CONTINUED FEVERS.

(*a*) Simple continued fever . . . . . 183

## CHAPTER XVIII.

(*b*) Ardent fever . . . . . 187

## CHAPTER XIX.

(*c*) Typhoid or enteric fever . . . . . 190

## CHAPTER XX.

(2) FEVERS IN THE COURSE OF WHICH THERE IS A CESSATION OF THE HEAT TEMPORARILY.

(*a*) Remittent fever . . . . . 200

## CHAPTER XXI.

(*b*) Intermittent fever, or ague. The subsequent effects of malarial fevers . . . . . 205

## CHAPTER XXII.

(3) THE ERUPTIVE FEVERS.

(*a*) Measles and German measles . . . . . 211

## CHAPTER XXIII.

(*b*) Scarlatina . . . . . 217

## CHAPTER XXIV.

(*c*) Small-pox. Modified small-pox . . 223

## CHAPTER XXV.

(*d*) Chicken-pox. (*e*) Dengue . . . . 231

CHAPTER XXVI.

PAGE

OTHER FEVERS.

(*a*) Rheumatic Fever. (*b*) Cerebro-Spinal Fever. (*c*) Influenza . . . . . 234

*DIVISION II.—AFFECTIONS OF THE MOUTH.*

CHAPTER XXVII.

(1) THRUSH . . . . . 240

CHAPTER XXVIII.

(2) INFLAMMATION OF THE MOUTH.

(*a*) Simple inflammation . . . . . 243
(*b*) Serious inflammation . . . . . 244
(*c*) Dangerous inflammation . . . . 246

*DIVISION III.—AFFECTIONS OF THE THROAT.*

CHAPTER XXIX.

(1) QUINSY, OR TONSILLITIS . . . . 249
(2) CHRONIC ENLARGEMENT OF THE TONSILS . . 250
(3) ABSCESS BEHIND THE THROAT . . . . 251

CHAPTER XXX.

(4) CROUP . . . . . 253

CHAPTER XXXI.

(5) DIPHTHERIA . . . . . 260

CHAPTER XXXII.

(6) MUMPS . . . . . 270

*DIVISION IV.—AFFECTIONS OF THE CHEST.*

CHAPTER XXXIII.

(1) COUGH. (*a*) Ordinary cold and cough. (*b*) Spasmodic cough. (*c*) Night cough. (2) INFLAMMATION OF THE CHEST. (3) CHRONIC BRONCHITIS. (4) BREATHLESSNESS (Asthma, &c.) . . . . . 272

CHAPTER XXXIV.

PAGE
(5) WHOOPING-COUGH . . . . . 285

*DIVISION V.—AFFECTIONS OF THE BOWELS.*

CHAPTER XXXV.

(1) CONSTIPATION . . . . . 290

CHAPTER XXXVI.

(2) DIARRHŒA. (*a*) Acute diarrhœa—simple—curdy—fetid—watery . . . . . 298

CHAPTER XXXVII.

INFLAMMATORY DIARRHŒA AND DYSENTERY . . 307

CHAPTER XXXVIII.

(*b*) CHRONIC DIARRHŒA . . . . . 312
(3) INFLAMMATION WITHIN THE ABDOMEN . . 316

CHAPTER XXXIX.

(4) PROTRUSION OF THE BOWEL . . . . 318
(5) COLIC AND FLATULENCE . . . . 319

CHAPTER XL.

(6) CHOLERA . . . . . 321

CHAPTER XLI.

(7) WORMS . . . . . 324

CHAPTER XLII.

(8) VOMITING . . . . . 332

*DIVISION VI.—DISEASES OF THE LIVER.*

CHAPTER XLIII.

JAUNDICE. MALARIAL AFFECTIONS. CONSTITUTIONAL AFFECTIONS. DISEASE AMONG NATIVES AND EURASIANS. EFFECTS ON THE URINE . . . 336

*DIVISION VII.—AFFECTIONS OF THE NERVOUS SYSTEM.*

CHAPTER XLIV.

PAGE
(1) HEAD SYMPTOMS. . . . . 344
(2) WATER ON THE BRAIN . . . . . 348

CHAPTER XLV.

(3) CONVULSIONS . . . . . 350

CHAPTER XLVI.

(4) INFANTILE LOCK-JAW . . . . . 356
(5) INFANTILE PARALYSIS . . . . . 358

CHAPTER XLVII.

(6) SUN-STROKE AND HEAT-STROKE . . . 362
(7) CHOREA . . . . . 365

---

*DIVISION VIII.—AFFECTIONS OF THE KIDNEYS AND BLADDER.*

CHAPTER XLVIII.

(1) DROPSY . . . . . 367
(2) INCONTINENCE OF URINE . . . . . 370

---

*DIVISION IX.—SKIN DISEASES.*

CHAPTER XLIX.

(1) NETTLE-RASH, (2) ECZEMA, (3) PRICKLY HEAT, (4) HERPES, (5) ITCH, (6) RINGWORM, (7) PEMPHIGUS, (8) BOILS . . . . . 373

*DIVISION X.—AFFECTIONS OF THE EYE AND EAR.*

CHAPTER L.

PAGE
(1) INFLAMMATION OF THE EYES . . . . 382

CHAPTER LI.

(2) INFLAMMATION OF THE EAR . . . . 387

---

*DIVISION XI.—ACCIDENTS.*

CHAPTER LII.

(1) BRUISES, (2) BLEEDING, (3) WOUNDS, (4) BURNS AND SCALDS, (5) SPRAINS . . . . . 391

CHAPTER LIII.

(6) SNAKE-BITES, (7) STINGS OF VENOMOUS INSECTS, (8) BITES OF ANIMALS . . . . . 402

CHAPTER LIV.

(9) FRACTURES . . . . . 407

CHAPTER LV.

(10) INJURIES OF THE HEAD . . . . 410

CHAPTER LVI.

(11) FOREIGN SUBSTANCES.—(*a*) Swallowed, (*b*) in the air passage, (*c*) in the ear and nose . . . . 412

CHAPTER LVII.

(12) RUPTURE . . . . . 417

CHAPTER LVIII.

(13) ACCIDENTAL POISONING. — Symptoms, Antidotes, Advice, Table of Treatment . . . . 419

# PART IV.

## CHAPTER LIX.

PAGE

**The Administration and Application of Remedies to Children . . . . 434**

---

SOME RECEIPTS CONNECTED WITH ALIMENTATION . 453

PRESCRIPTIONS, AND COMMENTS—

Alteratives . . . . 456 and 436
Anthelmintics or Worm Medicines . 456 ,, 440
Antispasmodics, Sedatives, and Carminatives . . . . 457 ,, 440
Applications . . . . 458 ,, 436
Astringents . . . . 460 ,, 442
Diaphoretics, or Sweating Medicines . 461 ,, 443
Emetics . . . . 461 ,, 444
Enemata . . . . 462 ,, 447
Expectorants . . . . 462 ,, 448
Purgatives . . . . 463 ,, 449
Refrigerants . . . . 464 ,, 450
Stimulants . . . . 465 ,, 450
Tonics . . . . 465 ,, 451

TABLE OF WEIGHTS AND MEASURES . . . 467

INDEX . . . . . 468

# THE MANAGEMENT OF CHILDREN IN INDIA.

## PART I

### On the Management of the European Child in India, while in health.

## CHAPTER I.

### INFANT MORTALITY IN INDIA,

AS INFLUENCED BY THE KIND OF MANAGEMENT TO WHICH THE CHILD IS SUBJECTED.



WHEN an individual becomes possessed of any piece of property, he will first consider what means he shall adopt to preserve it and to bring it to perfection; but his energies and zeal will naturally be regulated by two considerations, viz., the value of the property, and the results which he believes are possible of attainment. Assuming the value of the object to be universally assessed at a high rate, it is sure to receive a certain amount of attention; but its further treatment will wholly depend upon the opinion entertained by its possessor as to his power to preserve it and to increase its value. Should he believe that his efforts are capable of effecting little, if any, change in the ultimate result, he will, unless he be almost more than human, devote but scanty time and atten-

CHAP. I.

tion to it. If, on the other hand, he is convinced that according to his management so will be the return yielded, his interest and his energies will be fully concentrated upon it. So that, after all, it comes to be a mere question of individual belief. This is precisely the situation of the European parent in India as regards his child's health and well-being. *That which the parents believe, will guide the management of their offspring.* Perchance it is conceived that no power for good or evil is possessed, that the details of daily life have little to do with health or delicacy, with living or dying, and that "climate" is responsible for all misfortunes. Whatever be the nature of individual opinions, certain it is that great ignorance prevails upon this subject. Some believe one thing and others the opposite; but each acts, it may be imperceptibly to himself, upon his convictions or conceptions. Each side has part of an argument to advance, and neither is convinced.

Object of chapter.

It being quite impossible to obtain an intelligent appreciation of the subject discussed in this book without the possession of clear ideas as to the effects of good, bad, and indifferent management upon European child-life in India, it becomes a necessary preliminary to investigate these points. In doing so it will not be difficult to demonstrate the frightful results of bad management on the one hand, and the extremely favourable results of good management on the other, in the hope that the knowledge will stimulate the energies of parents in the right direction, convince them of the vast powers they possess, and of the great responsibilities they have incurred, as

well as enlighten those who are sceptical of their own ability to influence events.

Prevalent belief.

There is a vague impression abroad that the climate of India is extremely fatal to European child-life. Paradoxical though it appear, it may be stated that such a belief is at once true and untrue; the mortality is enormously in excess of that which prevails in Europe, and it is lower than, or as low as, that of Europe.

General mortality among soldiers' children.

The children of European soldiers in India are, few will deny, but indifferently cared for, in so far as the peculiarities of climate demand, notwithstanding the many efforts which are made to alleviate their condition. Without going too minutely into figures, it may be briefly stated that under five years of age the soldier's child lately died in India at the rate of something like 140 per 1,000 of strength. Now the death-rate in England for this period of life is about 68 per 1,000, or less than one-half of the Indian rate; and under fifteen years it is about one-third. Dr. Townsend drew up a table some years ago, which exhibited the contrast very plainly. It is, however, only fair to state that later years give much better results; for instance, in 1891 the death-rate of the soldiers' children in Bengal under 5 years was only half the rate quoted in the table.

Compared with England.

| | England—the mean of 29 years. | Bengal—Soldiers' Children, 1870. |
|---|---|---|
| Under 5 years ... ... ... | 67·58 | 148·10 |
| 5 to 10 ,, ... ... ... | 8·80 | 17·73 |
| 10 to 15 ,, ... ... ... | 4·98 | 11·51 |

CHAP. I.

Fairness of the comparison.

Nor can the comparison be stigmatised as being unfair; for although the management of the soldier's child may be characterized as indifferent, we have no approach to the actual bad management, the want, privation, and exposure to which multitudes of the children of the poor in England are subjected. A writer in the *Calcutta Review* (1866) observed, "The mortality among soldiers' children of pure European race more than trebles that frightful death-rate which prevails among the infants of the poor at home." The editor of the *British Medical Journal* (1878) thus contrasted the mortality of the soldier's child in India with that of children of the same age in London :—

| Deaths per 1000. | Under 1 year. | 1 to 5 years. | 5 to 16 years. | 5 to 20 years. |
|---|---|---|---|---|
| India ... ... ... | 314 | 104 | 20 | — |
| London ... ... ... | 185 | 35 | — | 5 |

The statistics for the last two periods are not so arranged that comparison can be exactly made, but "it is at all events quite certain that soldiers' children in India, between 5 and 16 years of age," not very long ago, died "with four times the rapidity which obtains among individuals varying between the ages of 5 and 20 in London."

This state of affairs has, however, undergone a favourable change—in 1889 the rate below 1 year was reduced to 209, and in 1891 to 202 per 1000; while the record of the latter year for the 1–5 years period, instead of being three times larger than that of London, was only twice greater.

The measures which have so vastly reduced the soldiers' death-rate have not effected the same in full measure for their children, as will be shown :—

Children's mortality not reduced in conjunction with that of the soldier.

Average death-rate of children per 1000 per annum.

| | | | | |
|---|---|---|---|---|
| 68·83 | during | 4 | years | (1851-54), Dr. H. Macpherson. |
| 94·90 | ,, | 6 | ,, | (1860-69), Dr. Bryden. |
| 77·73 | ,, | 7 | ,, | (1870-76), Dr. Bryden. |
| 67·47 | ,, | 5 | ,, | (1872-76), Dr. Bryden. |
| 75·57 | ,, | 10 | ,, | (1872-81), Bengal only. |
| 50·22 | ,, | 10 | ,, | (1881-90), Sanitary Commissioner. |

These figures include all ages below 16. It will presently be seen that the improvement here noted does not apply to young children.

We must therefore look elsewhere than to general external sanitary conditions to account for the excessive rate at which soldiers' children die in India.

Deaths to births.

Viewing the mortality for an earlier period in relation to the birth-rate, we find that in England about 15 per cent. of all infants born, die within the first year of life. There is but little evidence as regards soldiers' children in India in this particular, but the following may be quoted from the *Calcutta Review* of 1851 :—"Taking the returns of two regiments which reached India last year, we find that in one there have been born 44 children, of whom at the end of the fifteenth month there are only 29 surviving, showing a loss of 27 per cent. within the first year. In another regiment 52 children have been born within 14 months, of whom 32 have died within the same period, giving a ratio of mortality equal to 33 per cent. during the first 12 months of their Indian life. In another case, taking the children born in England or on board ship, who arrived with the regiment in India eight years ago, out of 159 (the original number) no less than 110 have perished. Of the remaining 49, how few in all proba-

CHAP. I.

bility will grow to manhood! Hence we see that whether we take 100 children imported from England, born of healthy parents, or 100 children born of the same parents within the first year of their arrival in India, still the melancholy fact remains the same." The same writer quotes the following table, exhibiting the respective ages of the survivors of 261 children born in one regiment since landing in India eight years previously :—

| | | | |
|---|---|---|---|
| From 7 to 8 years | ... | ... | 4 |
| ,, 6 ,, 7 ,, | ... | ... | 8 |
| ,, 5 ,, 6 ,, | ... | ... | 13 |
| ,, 4 ,, 5 ,, | ... | ... | 15 |
| ,, 3 ,, 4 ,, | ... | ... | 20 |
| ,, 2 ,, 3 ,, | ... | ... | 15 |
| Under 2 ,, | ... | ... | 38 |

Died 148. Survivors 113. Total in 8 years 261.

General result satisfactory, but does not extend to infants.

It would be easy to multiply instances and to place the contrast more vividly before the reader, but only to draw a terrible picture would be unprofitable. Enough, however, has been said to show the dark side in a general way, admitting at the same time that later statistics exhibit better results. For instance, the death-rate of soldiers' children, which for the ten years 1872-81 stood at 75·5 for Bengal, 67·5 for Bombay, and 55·3 for Madras, receded during the succeeding ten years to 50·2 for the whole of India. In Bengal alone, excluding cholera, it fell from 60·4 in 1881 to 47·5 in 1891. This is satisfactory so far as it goes.

But for the earlier ages the rates have not declined in a similarly satisfactory manner. Excluding cholera, the rates per 1,000 were as follows :—

| | | |
|---|---|---|
| 1872-76 | From birth to 6 months | 254·04. |
| | From 6 to 12 months | 199·19. |
| 1881 | From birth to 6 months | 267·64. |
| | From 6 to 12 months | 160·78. |
| 1891 | From birth to 6 months | 260·98. |
| | From 6 to 12 months | 149·12. |

If we take Bengal alone, the rate was no less than 303·3 during the first 6 months of life in 1891 against 333·3 in 1881.

The general result for all ages is, however, satisfactory. But it must be recollected that the number of children attached to British regiments has diminished, while the number sent annually to the Hills has greatly increased. The elder children too, are not so intensely influenced as the infantile contingent, by indifferent management. They soon regain health and strength in the Hills and are probably then better off than the English child of the same class in England.

Why?

Happily there is a bright side to be considered. Several years ago Dr. Macpherson undertook an investigation into the European infant mortality of Calcutta. His data were imperfect, yet he arrived at an inference the general correctness of which has since been verified. The following figures are recorded by him:—

The bright side.

| Ages. | Calcutta. 1,568 Deaths. | European rate. |
|---|---|---|
| Under 1 year of age ... | 54·7 | 55·7 |
| 1 to 2 years „ ... | 23·9 | 20·2 |
| 2 „ 3 „ „ ... | 10·6 | 11·2 |
| 3 „ 4 „ „ ... | 5·4 | 7·4 |
| 4 „ 5 „ „ ... | 5·19 | 5·2 |

European children in Calcutta.

and he then observed, "The table proves this much at least, that of all who die under five years the casualties at the earliest period are quite as few here as in Europe. The differences are trifling, and the results shown, if corroborated by further observation, would indicate that the season of teething is slightly more trying to children in India, but before and after

Macpherson's investigations.

CHAP. I.

Dr. Payne's facts.

that period they thrive at least as well in India as in Europe up to five years." Dr. Payne has done an important service by placing on record facts which are no less startling than instructive, in that they conclusively demonstrate the results actually attained by good management. He shows that, "while in the native town of Calcutta,* infants die as they die only in the most fatal countries, European infants, with 5·8 per cent. of deaths in the year, enjoy in Calcutta a degree of vitality which surpasses that of the most favoured spots elsewhere." Again, there is in Calcutta an institution named the European Female Orphan Asylum, of which Sir J. Fayrer has written a sanitary report for six years, commencing January, 1863. It seems that there was during that period an average of 65 inmates, varying in age from 1 to 18 years, the great proportion being between the ages 5 and 16. "The abstracts of admission into hospital show that there has been a great immunity from epidemic disease of any severity; and the

Results in orphan asylum.

* Dr. McLeod tells us that of the total infant mortality in Calcutta in the year 1884, "55 per cent. of the deaths took place within 15 days of birth. This also is in accordance with the experience of preceding years. The tetanus, which accounts for so large a proportion of the casualties, occurs and runs its fatal course within a few days of birth. As regards sectional mortality, Burrabazar gives a ratio of 50 deaths among 100 living infants. The following sections show rates exceeding 40 and falling short of 50 per cent.:—Shampooker, Sukea's Street, Jorabagan, Jorasanko, Moocheepara, Cullingah. Among these, the sections Jorabagan and Jorasanko approach 50 per cent. very closely. The remaining sections are below 40. Taltollah approaches that rate very closely, and Waterloo Street indicates only 1 per cent. These results correspond with and confirm the statistics referring to race displayed in previous tables."

very low mortality (6 deaths in 6 years), as well as the small amount of sickness, prove that the European child, under proper hygienic conditions and careful physical training, may live and thrive in the plains of Bengal *almost* as well as in its native country." The Sanitary Commissioner with Government admits these facts as proof that, under favourable sanitary conditions, Indian climates are not necessarily so injurious to the health of European children as was formerly supposed; while Fayrer, in commenting upon Dr. Payne's report, considers that up to 6 or 8 years of age European children "thrive, if anything, better than in England."

Sanitary commissioner's opinion.

Fayrer's comment.

We need not travel so far as India to observe an immense difference in the infant death-rate. Dr. Farr found that the infant mortality of European countries ranged from 41 per 1,000 in Norway to 113 per 1,000 in Italy. In the year 1860 the infant mortality (under one year) in England was 17, while in Scotland it was only 14½ per cent. In some mining districts of England 270 infants under one year die annually out of every 1,000 born, while in rural districts about 100 less children perish within the same period. These instances will suffice to show that in other general communities differences are as well marked as they are in India.

The dark and bright sides in European countries.

Referring again to India, infant mortality is small among the Europeans of Calcutta, large among the Eurasians, and very large among the natives, being higher among Mahommedans than Hindus.*

Different races in Calcutta compared.

* White ... .. = 58 per 1,000 born.
Mixed Races = 306 ,,
Hindus ... = 315 ,,
Mahommedans = 363 ,, (*Payne.*)

CHAP. I.

Necessity for the foregoing knowledge.

The significance of all these facts leads to a conclusion of the greatest practical importance, and one which it is most desirable should be thoroughly comprehended by those who have the charge of children in India, for without such knowledge the immense powers we possess in the matter of preserving infant life not only remain obscured, but they can hardly be guessed at,—so great, so enormous, so otherwise incomprehensible are they.

Why are these things so?

What, then, is the reason that soldiers' children die at a high rate, while of the European civilians' children an opposite condition holds? that native children die at a most excessive rate? that the Eurasian rate is intermediate between these two latter? that the rate which prevails in certain countries of Europe is double or treble that of other European countries? that the rate for England is higher than that of Scotland, and that it even varies in certain districts of England itself? The reply is summed up in the one word, management.

The different results entirely explained by the management to which subjected.

"In respect to the management of infant health, and referring to the theories and empiricisms brought to bear upon it," writes Sir R. Martin, "I have everywhere observed that even the fatal results of mismanagement but rarely cure the mother of her theory or her quackery,—so much stronger are ignorance and preju-

---

Dr. McLeod says of 1884 in Calcutta:—"Infant mortality is higher among natives than Christians, and the rate at which the infants of Mahommedans appear to die is remarkably and lamentably in excess;" again, "the proportion per cent. which tetanus constitutes of the total infant mortality among the different races is as follows:—Non-Asiatics, 15; mixed races, 15; Hindus, 44; Mahommedans, 43."

dice than death." For this very reason I have appealed to the intelligence of the reader, who, if he will but reflect upon the facts here put before him, ignorance, prejudice, theories, and quackeries cannot prevail.

Individual responsibilities.

Know, then, that whether your child is to live or to die in your far-off home is a matter which lies largely in your own hands. "The treatment of the child in the first twelve months either destroys his life or leaves indelible traces on his future existence," wrote Farr, who procured detailed accounts from several countries in Europe of the treatment of their babies, and found it to be very different, and in many instances very sad. "Here they are bound up like mummies; there they are not nursed by their own mothers, and as they advance in age are fed on improper food;" and to the difference in management the difference in mortality is shown to be due. The same great authority observed that there is something terribly faulty in the present mode of treating infants in England, "for if the English mortality from convulsions were reduced to the Scottish standard, 17,000 lives would be annually saved to England. These 17,000 lives who annually die in England from convulsions above the Scottish proportion are truly lives wasted, and their deaths are truly preventable deaths. There cannot be the slightest doubt that the cause of the very high mortality among the nursing children of England is that they get spoon-food far too early in life, before the stomach of the tender babe can digest anything but the mother's milk. This is, indeed, the vital difference between the mode of feeding infants in England and in Scotland." As a further illustration of the result of neglect it may be mentioned that the

Investigations as regards Europe.

CHAP. I.

mere fact that a child is born out of wedlock doubles the chances of death within a year of birth (*British Medical Journal*, December, 1886). In other words, out of 1,000 legitimate children born in Glasgow, 142 die before they reach their first birthday, while for illegitimate children the corresponding figures are 277. The high tribute which is exacted by death from the parents of infants in the mining districts of England is due to the same causes as those alluded to by Farr, in an exaggerated form; while the agriculturists, whose pecuniary means are less able to bear the burden of supporting a family, are immensely more fortunate, because custom does not demand that they desert their infants daily, for the mine's mouth or the factory.

The Registrar-General in his report for the quarter ending September, 1886, points out that while the rate of infant mortality in London did not exceed 144 per 1,000 registered births, it averaged 172 in the 27 large provincial towns, among which it ranged from 129 and 139 in Birkenhead and Derby to 207 in Oldham, Wolverhampton and Halifax, 208 in Blackburn, and 237 in Preston.

Dr. Reid, of Staffordshire (*B. M. J.*, January, 1894), alluding to the effect of factory labour on infant mortality classfies thus :—

Group 1. Many women engaged in work.
„ 2. Fewer „ „ „ „
„ 3. No „ „ „ „

The deaths of children under 1 year per 1,000 births was 196, 173, and 160 respectively.

Investigations as regards Calcutta.

The squalor, dirt and confinement of parts of all large towns exert their marked influences in a very perceptible way among the children of the poor, just as they do in the native portions of Calcutta. Of the infant mortality of that city, Dr. K. McLeod tells us that in 1884, "very nearly 75 per cent. was contributed

by fevers, convulsive diseases, and bowel complaints in the proportion respectively of 14, 57, and 3 per cent. of the whole. Tetanus accounted for 43 per cent. of the whole mortality among infants."

Writing in 1885 Dr. Sanders states that deaths of infants under one year of age constitute about 12 per cent. of the total mortality of the town (Calcutta), and amount to a ratio of 401·3 per 1,000 of the living and 316·4 of the estimated births. Tetanus accounted for 1,228 of 2,819 deaths. Dr. Sanders attributes this disease to the insanitary conditions of the lying-in room, and makes the following apposite remarks on the subject. In the Eden Hospital there were, from its opening to the end of 1885, 491 European births with no deaths from tetanus. Here all have the same accommodation with regard to ventilation and space. On the other hand, a native child born at home is from the first carefully kept from all respirable air, and remains in a state of impending suffocation for days on account of a pan of charcoal kept burning in a very small, closely confined room, where the birth has taken place, into which no air that can be kept out is allowed to enter. I have been into many of these apartments, sometimes specially built up in other rooms, and in none have I been able to breathe: the foul and fœtid atmosphere is like that of a well. Hindu women go through this cooking process from 7 to 10 days or longer, and with Mahommedans it is even more protracted. To this longer process of simmering in a fœtid atmosphere is due the higher death-rate amongst Mahommedan women and children.

"That a high rate of infant mortality should prevail in native Calcutta will appear natural to those who know the effect of filth and foul air on infant life, but the full measure of this needless destruction of life can only be understood by consideration of its special causes, of the singular exemption of European infants, and of certain saving influences which are in existence here, but are neutralized" (Payne). But though dirt in Calcutta plays its usual part in enhancing the mortality, in the more filthy localities the actual death-rate

CHAP. I.

is but slightly in excess of that of the cleaner places; and the proportion of deaths among the various races is maintained without variation in all localities, proving that to the domestic treatment of the infants the terrible result is really due, and not primarily or principally to dirt.

A low mortality to be expected in India.

It has often been remarked that there *ought to be* a low rate of infant mortality in India, seeing that the scrofulous constitution is far less likely to be developed in a tropical than in a temperate climate, and that scarlatina, measles, whooping-cough, and other affections peculiar to childhood, are either unknown, or run such mild courses as virtually not to affect the death-rate. "Calcutta, among its resources for the destruction of infant life, does not include those less avoidable causes of death which work elsewhere, but owes to qualities or habits of its own the pre-eminence which must be assigned to it among deadly places. That European infants die in small numbers means simply that they are not subjected to the same fatal treatment; and that the mixed races hold an intermediate place is due to the admixture of native habits among the poorer classes. Death, where it abounds, does not arise from climate, or any cause that is out of reach, but from that which the people have created and perpetuated for themselves" (Payne).

General conclusion.

Happily, the verification of the legitimate anticipation that a low death-rate is normal to India has now been attained; and it is proved beyond all gainsay that the management to which parents subject their children is the great factor which influences the result.

## CHAPTER II.

### GENERAL EFFECT OF THE CLIMATE UPON THE CHILD'S CONSTITUTION.



Notwithstanding, the climate is inimical to European child-life.

WE have seen that there is really a very hopeful—indeed, we may say a satisfactory—side to the question, in that the climate is deadly only as we make it so. But is the climate of the plains of India in no way inimical to the European child's constitution? No well-informed person will reply to this question in the negative. Unfortunately it cannot be said that no hurt is to be apprehended greater than might occur in its natural climate. On the contrary, it may be laid down as an axiom that *an amount of carelessness which in England will give but an ordinary English death-rate, will in India yield a frightful mortality.* Neglect in India will render the chances of survival much less than those of death,—in a word, to preserve our children to us in normal proportion we must adopt precautions more stringent than are called for in England.

Medical testimony on the point, and the age at which a child should be sent to Europe.

There is a pretty general medical opinion that the Indian climate does not in any way injure the health of the European infant during the first year of its life; further than this, the conviction is prevalent that with proper precautions up to the age of 5 or 6 years the child may be reared nearly as satisfactorily in the

CHAP. II.

plains of India as in Europe; but beyond these ages all are agreed that physical and moral degeneration occur. The child then "exhibits the necessity for change of climate by emaciating and outgrowing its strength" (Martin). So profoundly does the climate, after the period of immediate childhood, influence the constitution that the effect of a more prolonged residence is rendered permanent throughout life. Such is the teaching of experience; indeed, Sir R. Martin went so far as to condemn the attempt to rear children up to and past youth, in the plains, as an "altogether cruel and impracticable endeavour." And so it is, unless there be special management. Dr. K. Mackinnon remarks that, even where there is no tangible disease, nutrition and oxygenation do not appear to go on favourably, the skin becomes pale, the muscles waste in substance and tone, the joyous spirits of children are wanting, the body is inert, and the mind listless. We daily observe evidence that "the European was not made for the climate, nor the climate for him" in the attempts to rear children in the plains past a certain age. "The children of the upper classes of Europeans in India who remain there during the first five or six years of infancy only," says Martin, "exhibit a restlessness and mobility of the nervous system —a busy idleness—beyond their age, as compared with the habits of children of the same ages born and bred in England. There is also a marked disposition to relaxation, and to a loose, relaxed state of the joints in such children, and to consequent lateral curvature of the spine." In 1872, Sir J.

Fayrer wrote without being in possession of the valuable facts which Dr. Payne has since put forward; yet the case cannot to-day be stated more correctly and more plainly than in the following words, when he says, "I have no desire to prove too much, as I certainly should appear to attempt to do were I to advocate the theory that Calcutta, or any other part of the plains of India, is a *desirable* locality for the training and nurture of European children; such, indeed, would be a theory as dangerous as false. For although the exceptionally favourable circumstances of the European Female Orphan Asylum prove that the European child may thrive, yet it is certain that without favouring influences it will not; and the statistics of infant life in the British army in India prove not only that such is the case, but that the obstacles to success in the rearing of children are very great. It has long been known to the English in India that children may be kept in that country up to five, six, or seven years of age without any deterioration, physical or moral, and in the higher classes of life with probably as little, if not less, danger to life than in England; for most assuredly in some respects—as, for example, scarlatina, measles, whooping-cough, thoracic complaints, and even dentition—they suffer less in India than in England. But after that age, unless a few hot seasons spent in the hills should enable parents to keep their children in India until a somewhat later age, to do so is always a doubtful proceeding. The child must be sent to England, or it will deteriorate physically and morally,—physically because it will grow up slight, weedy, and delicate, over-precocious it may be, and with a general feebleness

CHAP. II.

not perhaps so easily defined as recognised, a something expressed not only in appearance, but in the very intonation of the voice; morally, because he learns from his surroundings much that is undesirable, and has a tendency to become deceitful and vain, indisposed to study, and to a great extent unfitted to do so,—in short, with a general tendency to deterioration which is much to be deprecated, and can only be avoided by removal to the more bracing and healthy (moral and physical) atmosphere of Europe." The further we investigate the matter it becomes more and more evident, in the words of Quetelet, that "care does everything, and climate nothing or very little;"—nothing in the native climate of the child, and not much in a foreign climate. Circumstances combine to prevent some persons sending their children to Europe. For such there ought to be immense comfort in the knowledge that with properly directed care the pernicious effects of climate, which carelessness will render disastrous, may be assuredly to a great extent warded off.

Why the infant is peculiarly liable to the influence of climate.

This is the proper place to inquire, what are the peculiarities in the infant constitution which render the climate of India obnoxious to its vitality and maturity? The several parts which compose the body of the infant in any climate are softer, they contain more blood, and are more fluid than those of the adult. The skin is exceedingly delicate, and the microscopical blood-vessels which pervade the whole body are at this early period of life exceptionally active. The same may be said of the glands. The brain is large, and it is less solid than in the adult. The whole nervous system is developed out of all proportion in advance of the

muscular system, wherefore the excitability is greater by far than at any subsequent period of life, and it is to be recollected that all the functions of the body are immediately under nervous control. In short, the vital powers are intensely though delicately active, the nervous susceptibility is extreme,* and there is a quick and comparatively strong circulation, with a very abundant supply of blood. Now it may be laid down as an axiom that the higher the temperature the more susceptible is the system to nervous influences. A hot climate at first stimulates the nervous system (even in the newly-arrived adult), which being, so to speak, in excess in infancy, is in greater proportion thus affected if unduly exposed. Hence we have in hot climates infantile lock-jaw, frequent convulsions, death during teething, and an abundance of nervous affections generally, where there is bad management. But a hot climate has a secondary or depressing effect, producing a feeble circulation and lessened muscular power, with consequent congestion of the liver, spleen, and bowels, which are pecularily soft and vascular in infancy. The minute muscles which ensheath the innumerable blood-vessels of these softer organs, being relaxed, their veins and arteries expand, the result being that a certain amount of blood, which is thus wrongly stored, is lost temporarily to the general circulation and to the nutriment of the body. The balance between the circulation and nervous influence is, in fact, disturbed, and a

Morbid constitutional effects of a hot climate.

* Consequently an infant may succumb to an illness before there has been time for it to affect any organ sufficiently to permit subsequent detection.

CHAP. II.

chill may easily drive a large quantity of the blood which is on the congested surface into the deeper and warmer organs, the little blood-vessels of which have lost the contractile power to return it, and thus internal congestion, which is the beginning of many diseases, may be established.

This knowledge applied to infant life explains the statistical facts.

This knowledge not only coincides with all the facts stated in the first chapter, but it actually explains them. The infant under ten or twelve months of age, with care, thrives, we have seen, as well if not better in India than in Europe, because the large amount of heat which is natural to it, and which then is one of its greatest requirements, it has in abundance, and at the same time means are taken not to expose it to excessive heat. It possesses freely the blessing of fresh air, more so than in Europe, and its food being everywhere uniformly simple, the vital functions enumerated are not called upon unduly; hence the favourable statistics of the children of the well-to-do Europeans in Calcutta, whose education, and the facilities yielded by social position, enable them to adopt those precautions against the effects of a tropical climate which are so easily put into practice where there is an abundance of house-room and a sufficiency of attendants, but which nevertheless are out of the reach of none; while the indifferently cared for soldiers' children give a high rate of mortality from nervous affections and diarrhœa during the earlier months of life, and the badly managed infants of the natives of Calcutta yield a terrible mortality from lock-jaw and other nervous disorders.

But when the term of infancy has expired, the child participates more and more as its life advances in the

disadvantages under which the adult exists in India till after a few years they are exceeded. The elder children therefore languish, or to some extent degenerate. What are these disadvantages? Categorically, they may be enumerated thus:—(*a*) a digestion slower than in the European's natural climate, (*b*) consequently a lessened appetite, (*c*) and therefore slower nutrition; (*d*) a generally relaxed state of the system, (*e*) a tendency to poverty of blood, (*f*) and finally, lessened mental and bodily vigour, because the wear and tear (waste) incidental to climate are more considerable, while the supply (nutrition) does not replace the loss so rapidly as in a colder climate.

Effects on general health of elder children.

These are the more plainly marked deleterious effects; but there are others which it is desirable to mention briefly. Heat of climate very materially affects the quality as well as the quantity of the food appropriated for nutrition, and not infrequently creates a morbid appetite for a class of food which may sooner or later prove injurious. The belief is now largely entertained that the summer infantile diarrhœa of England is chiefly due to an alteration effected in the quality of the food by sudden accessions of heat. With such accessions, the infant bills of mortality rise, in England, as certainly as does the thermometer. Every parent in India is aware of the trouble there is to restrict children to their appropriate food; how the light pudding is carefully eschewed, and highly-flavoured meats clamoured for—a petition too frequently entertained. The effects of the vicissitudes of the Indian climate are deserving of a moment's consideration. The skin is, it is almost needless to

Other effects of climate.

On the food and appetite.

CHAP. II.

state, penetrated with nerves so closely that a needle's point cannot touch it without coming into contact with some of them, and all these nerves have direct telegraphic communication with the inner vital parts of the body. In consequence of the congested state of the surface, and the exalted nervous impressionability of the child in India, as products of a hot climate, the

Chills.

body is peculiarly liable to chills, which, being conveyed by the nerves to the interior, frequently derange the functions of the abdominal glands, obstructing assimilation of nutriment, creating congestions, and otherwise

The liver and spleen.

doing injury. The liver and spleen frequently suffer much in this way. An impaired liver means diminished removal of worn-out tissues, and their consequent retention in the body; while the spleen, having much to do in the way of perfecting the blood and preparing it for nutrition, if impeded in its function, is sure to originate poverty of blood and general loss of bodily vigour. There is yet another important effect of

Respiration.

climate, viz., that the force of the respirations is very greatly diminished. The lungs being one of the great channels for the consumption of worn-out materials by oxygenation (combustion), their diminished action will manifestly throw additional work upon the liver, which also largely disposes of waste. But the liver itself is, so to speak, working under difficulties; hence we see how essential it is to adopt simplicity of diet, and to attend to the state of the bowels, these being the most potent, though the easiest means of preserving the healthy action of the liver, the derangements of which need not actually amount to disease to work profound harm.

European children thrive well in the hills.

*Effects of Residence in the Hills.*—In 1873 there were 1,082 soldiers' children located in the hills, many of whose constitutions no doubt had previously undergone deterioration in other parts of the country, and there were 5,671 in the plains. The death-rate among the former was 50 per 1,000, and among the latter 71 per 1,000.. In the previous year the proportions were 91 and 117 per 1,000 respectively. The numbers of the previous four years were much the same. These figures represent an additional mortality of 20 per 1,000, or 110 deaths in the plains out of the 5,671 children more than would have occurred had all been in the hills. Sir R. Martin, in 1861, wrote, "The principal of the Lawrence Asylum says that the children of soldiers in the plains die so early that only about one in five is found surviving its fifth year of Indian sojourn, while in the mountains they thrive like children in the healthy country districts of England." In the same asylum from 1847 to 1850 only two deaths occurred, and those were of children who had been but a few weeks in the institution, and who arrived ill. It is true that "the inhabitants of the asylum have nearly all passed the most dangerous period of life, but a small proportion being under five years of age" (Sanitary Commissioner), and that it is therefore hardly fair to institute the comparison: nevertheless the fact stands out prominently that the community is an exceptionally healthy and vigorous one. Beyond all cavil, European children may be born and brought up in the hills in a state of physical health not inferior to that of those who have been wholly reared in Europe. Every old resident knows many such, but unless advan-

CHAP. II.

tage be taken of some of the excellent institutions which are available, the moral tone is not likely to be of a high order.*

* Recent statistics are not, at the moment of writing the third edition, at hand; but they are really unnecessary, as the facts above related present the case as it now stands quite fairly.

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## CHAPTER III.

### THE MOTHER'S HEALTH DURING PREGNANCY,

#### AND ITS EFFECTS UPON THE CHILD'S CONSTITUTION SUBSEQUENTLY.



Subject not generally appreciated.

THE mother's system yields nourishment to the infant before its birth. By bearing in mind the extreme rapidity of the child's development while still within the womb, and that no other material than the maternal blood is supplied to meet the whole burthen of growth, it becomes easy enough to understand the great influence thus exerted upon the constitution of the child; but the extent to which it may suffer is either unknown, or it is generally but very ill appreciated. Possibly it may be that while the influence of the quality of the blood is admitted, there is a difficulty in believing the readiness with which it becomes changed in response to the surrounding circumstances of the individual, for as no mother would wittingly malnourish her child after its birth, it is hardly to be supposed she would commit a similar crime before it had been called into independent existence.

Its importance.

Under any circumstances the health of the pregnant European woman is, in India, liable to sufficient deterioration to cause it to be a matter of importance that she should adopt precautions more strict than are

CHAP. III.

demanded in Europe; otherwise not only may mischief arise to the child, but even its death be brought about. Nothing is more certain than that impressions, constitutional or mental, are transmitted to the child from the mother while the former is still within the womb. "This consideration is of such importance, and appeals so directly to the most powerful feelings of womanly nature, that it ought to be sufficient to ensure an adequate attention to health on the part of all likely to become mothers. Common sense and a little self-denial will generally secure all that is in her power" (Churchill).

Hygiene of the pregnant woman.

The diet of the pregnant woman should be amply sufficient, but always simple. An unusual use of wine or beer is not only unnecessary but positively injurious. The capricious appetite, which attaches to the condition of pregnancy, must not be yielded to. Moderate exercise, short of fatigue, should be indulged in. Riding, dancing, and all violent exercises, such as lawn tennis and badminton, of a straining nature should be avoided. Walking is beneficial. The legs may be used, but the arms should be spared. By straining at the games named, just as happens in lifting weights, the abdominal muscles are brought into sudden and jerky action, which obviously ought to be avoided. Late hours are to be eschewed. Rest in the horizontal position may be more freely indulged in than formerly. The bowels should be kept regular by means of diet, or, if necessary, by castor-oil or rhubarb. Such aperients as aloes and seidlitz-powders, as well as all patent medicines of unknown composition, are to be avoided as dangerous. The dress should be loose, so as to allow space for the growth of the child and to give a freedom to the mother's

lungs sufficient to compensate for the increased upward pressure of the womb on her chest. It is not desirable that she should forego any of her usual occupations.

Importance of control of temper.

Not less important is it that the future mother should control her temper and avoid scenes of excitement. The brain and nervous system of the child are developing with such rapidity that any diseased action is, as it were, easily sown in such a virgin soil, and once established is not so easily dispelled, but may gain force proportionately with increase of the organ, which then possesses no natural powers of resistance to re-establish healthy action. Instances are not wanting of the immediate death of the infant in the womb of a woman who has been subjected to sudden terror or violent passion; nor is it difficult to learn of many cases in which severe mental emotion of the mother has been succeeded by an offspring possessing a feeble constitution, and subject to epilepsy, convulsions, or even insanity.

Maternal mental emotions transmitted.

Facility of originating disease in the unborn infant.

The infant participating thus in the health of the mother, any evil changes induced in its delicate organism may become permanent, terminating in life-long disease. "The children of persons who enfeeble their constitutions by late hours, by being in hot and crowded rooms, and by irregular diet, are far more disposed to convulsive affections than the children of those who are regular in their mode of living, and who enjoy calm tranquillity" (Tanner).

## CHAPTER IV.

### MANAGEMENT OF THE INFANT AT AND IMMEDIATELY AFTER BIRTH.

*Section I.—The First Day of Life.*

CHAP. IV.

Points requiring immediate attention.

AN infant, let us assume, has been born without accident, and separated from its mother. The essential points demanding immediate attention are, care of the cord, warmth, and rest.

Inspection of the cord.

The cord having been inspected carefully to see that there is no oozing from it, the infant is to be rolled in flannel, which has been well warmed, and allowed to rest in the arms of an ayah or other warm place, while the necessary attention is being bestowed upon its mother. Warmth is at this moment of the greatest consequence, for the temperature of the newly-born infant falls several degrees below that which, during the rest of its life, will be natural to it, or which would subsequently be compatible with its vitality.

Warmth.

Rest.

Rest, for these few minutes after the comparatively violent exercise of struggling and handling, is a good thing, though hardly essential so far as it concerns delaying the next operation, namely, the bath, should everything be ready for it; but which, in any case, after this interval, is (at a temperature of 100°) to be administered with *gentleness and rapidity.*

Temperature of bath.

If there is not a thermometer at hand, the elbow of the nurse immersed in the water will afford a fair test as to the appropriateness of the temperature. The hand should not be trusted to; it is not so sensitive as the thinner skinned and habitually protected elbow.

Vernix caseosa.

Sometimes there is a large quantity of white sticky substance adhering to the child's skin; sometimes there is but a little, almost always some. The complete removal of this substance is usually easily effected by anointing, with a little friction, those portions of the skin upon which it is seen, with warmed oil, lard, or butter. An emulsion is thus formed, which admits of ready removal with the sponge, soap, and water, while the child lies upon the nurse's lap, before immersion in the bath. Should it happen that all the white substance is not thus completely removed, no delay, or picking or rubbing, is justifiable in further attempts. Rapidity and gentleness are the really important points, and it is of no great consequence whether thorough dislodgment be effected; but it is of moment that neither chill nor exhaustion be imposed upon the delicate organism which has been transported from the warm, dark, and still womb, into the midst of cold, noise, and light. A word of caution as regards the eyes, during this first bathing, is necessary. Scrupulous care should be observed that none of the soiled water be permitted to enter them, otherwise the infant may commence its life with an attack of ophthalmia. The process of drying and the application of dusting powder (*see* "violet powder") are now to be proceeded with.

First washing.

Quickness and gentleness essential.

Care of the eyes.

Navel-string.

The arrangement of the navel-string next claims attention. The first thing to be done is to re-examine it attentively for a moment, and if there is any appear-

CHAP. IV.

ance of blood oozing from it, to apply a fresh ligature close to that which is already upon it.

Great care must be taken that the cord be not jerked or pulled, through carelessness. From the centre of a piece of soft, clean rag, a portion is cut sufficient to allow the cord to be passed through it, and this having been placed in position, a strip of similar rag which has been sprinkled with the dusting powder (16), to which a sixth part or so of boracic acid powder had better be added, is to be gently wound round the cord, which should now be loosely coiled upon the flat piece which lies upon the abdomen. Over all a flannel binder is to be sewn with a wool-needle and cotton (pins should never be employed), and the process of dressing is to be completed. Then the infant should be wrapped in a soft woollen shawl and placed in its mother's arms, in close proximity to her body. Usually the baby will at this time fall asleep, and so remain for some hours.

Infant's sleep not to be disturbed.

From such a slumber an officious nurse must not be permitted to awake it on the plea of giving it nourishment, or upon any other pretence. Should, however, there not be an inclination to sleep, the mother may at once

Infant to be given the breast at once.

apply the child to her breast, an act which will prove beneficial to herself and to her infant—to the former, by contributing to the contraction of the womb and stopping any tendency to bleeding; to the latter, by communicating warmth, and inducing the flow of nourishment.

The circumstance of proximity to the mother was found by Dr. Crombie's observations to exert a marked influence on the temperature of the infant. The power of manufacturing its own heat has not yet been acquired. All the heat which can be safely spared has been parted with by the little body, which cannot create more,

to be retained by the shawl and clothing. "The consequence of this is that the powers of the child are insufficient to raise its temperature above 94 or 96 degrees unless assisted by artificial warmth to be derived from the body of its mother. A great practical lesson underlies this subject, namely, the duty of the physician to see that newly-born children, especially such as are weakly or premature, are never left exposed unnecessarily to the air, even in a warm climate like this; that they are warmly clad, even from the very first, and that they receive all the artificial warmth from their mothers possible. The feeble powers of the young infant may be just insufficient to raise its own temperature to a point compatible with the performance of the functions of life, unless aided by the instinct with which mothers are endowed, to lessen the radiation from the surface of their infants by contact with their own persons."

Imparted warmth essential.

Another reason why the infant should be in proximity to its mother at this time is that it enables the ventilation of the room to be thoroughly carried out; a matter of the greatest importance to both mother and child. So long as the infant lies in contact with its mother's warm body, there need be no fear of its catching cold. The windows and doors may be thrown open with impunity, if only draughts be excluded and the cold is not excessive. As a rule the lying-in chamber is kept much too warm, either for comfort or safety.

Imparted warmth to infantenables ventilation of apartment.

The mode of dress must be left to the previous ideas of the mother, but a protest cannot be out of place against the "fashion" which prescribes innumerable garments, and which, to say the least, entails delay, unnecessary exposure, and fatigue at a moment when each and all of these should be avoided.

Dress.

It is seldom, if ever, necessary to have recourse to any artificial means of nourishing the newly-born infant, though prejudice on the part of nurses usually eventuates in an opposite course. "Seeing is be-

No artificial food to be given.

lieving," say they, and till the white fluid can be actually squeezed from the breast, it is concluded no nourishment is secreted. Thus has originated the popular belief that till the third day there is no sustenance for the child to be had from the mother. This is altogether an error, and a serious error.

Secretion of breasts is sufficient.

Nature has fully supplied all that is necessary for the wants of the child. "Small in quantity and comparatively poor in quality as this provision admittedly is during the first two or three days after delivery, it is nevertheless amply sufficient for the purposes of nutrition" (Ewart). Not only is this so, but the early secreted juice (for milk in appearance it then is not) is almost invariably sufficient to effect the removal of the black contents of the bowels, about which nurses usually express so much anxiety that they are unhappy if not permitted to drench the unfortunate infant, within a few hours of its birth, with purgatives. The secretion which is at first abstracted from the breast by the infant meets all requirements of nourishment and purgation; sleep, warmth, and cleanliness being its only other necessities.

Some deprecate the practice of putting the child to the breast immediately after its birth. It is well, therefore, to quote the words of a great authority. "The earlier a child is put to the breast the more fully does the uterus contract, the sooner is the meconium purged off, the less chance will there be of the mother suffering from milk fever, sore nipples, distended, painful, and knotty breasts, milk abscesses, &c., and of the child from flatulence, disordered stomach and bowels, aphthæ, &c." (Rigby).

No aperient to be given, being actually injurious.

The castor-oil which it is usual to administer to the newly-born infant is actually injurious, in that it acts as too rapid and too powerful a purge. It at

once removes the whole contents of the intestine, part of which, it is intended by nature, should be absorbed into the blood, to contribute nourishment and heat to the body, pending the full secretion of milk and during that period of rest which is so much needed by mother and child. When castor-oil has been wrongly administered, it is almost a necessity that some artificial food be given, because a premature appetite has been created by the removal of nature's provision. Restlessness follows as a matter of course, instead of that complete tranquillity which should be enjoyed. The infant is needlessly subjected to the risks and disadvantages of artificial food (*vide* Chaps. VI. and VIII.) at the very moment when it is least fitted for an ordeal by which indigestion, flatulence, and perhaps bowel irritation may be induced. In short, the balance between nutrition and digestion is overthrown by interference, while the probability of necessity for the further use of aperients is increased.

Remainder of the first day.

Throughout the remainder of the day the infant should be left wholly with its mother, who should offer it the breast whenever it wakes or cries, without reference to periods of time. Thus the attention of the parent will be diverted, and anxiety for herself removed. Of course care must be taken to change all wetted and soiled napkins without delay, and to wash the soiled parts of the child with warm water. A few hours after birth, perhaps in a much shorter time, the first flow of urine will have taken place, and possibly the usual black evacuation from the bowels will have occurred. In this manner should be conducted the first day of the infant's life. "Masterly inactivity"

CHAP. IV.

is a policy which will be found eminently suitable to India, in this matter at least.

*Section II.—Accidents and Unnatural Conditions.*

But all may not go smoothly with the child. There are some *accidents which may happen at or immediately after birth*, and some unnatural conditions, which, with their remedies, we now proceed to consider briefly.

Stillborn.

I. A child may be apparently STILLBORN, or it may apparently cease to live very soon after its birth. Not a moment should be lost. A human life is in the balance, and let it be remembered that in seemingly the most hopeless cases proper and instant treatment is frequently rewarded with success. Proceed as follows: —

(*a*) Clear the mouth.

(*a*) Wipe out the back of the mouth, gently but effectually, by a deep sweep of the little finger round which a fold of a moistened soft handkerchief has been passed.

(*b*) Child attached, and cord pulsating fairly.

(*b*) If the child is still attached to its mother, ascertain by grasping the cord lightly between the forefinger and thumb whether there is any pulsation in it. If there is pulsation, do not divide the cord until the child has cried vigorously; for so long as the cord beats there is some circulation through the child's body, which may serve to maintain life till respiration becomes well established. At the same time dash a little cold water upon the face and chest of the infant, administer a few light but smart slaps, and with the fingers placed upon the lower part of the chest where the ribs separate, give an occasional jerk inwards, removing the hand suddenly each time. Should there be any delay in the

commencing of breathing, while the child still remains attached to the mother, begin artificial respiration as below described.

(*c*) If the pulsation in the cord be so feeble as to make it almost doubtful that any exists, and if there are no signs of returning animation; without hesitation put a double ligature upon the cord, divide it between the ligatures, and proceed as directed in the following paragraph :— (*c*) Barely perceptible pulsations.

(*d*) If there is no pulsation, quickly ligature and divide the cord. Dash a little cold water on the face and chest of the infant, and smartly slap the chest and the buttocks. Plunge the infant for about half a minute into a warm bath (temperature 102 degrees or so); rapidly remove it from the water, and holding it by a finger hooked into each armpit, expose it to a current of air, by swinging it backwards and forwards two or three times. (*d*) No pulsation of cord.

(*e*) If success does not attend these efforts, proceed at once to excite artificial respiration. (*e*) If no success, artificial respiration.

(*f*) If the afterbirth has been expelled with the child, or if the separation has already been effected by the attendant, at once adopt the measures described in the foregoing paragraphs (*d*) and (*e*). (*f*) Afterbirth expelled with stillborn child.

ARTIFICIAL RESPIRATION is conducted as follows:— Having cleansed the child's face rapidly, apply your lips closely over its mouth and blow once very gently so as to expand the lungs a little. Place the infant on its back on the bed, the head being thrown well back, and the chest elevated by a couple of folded napkins beneath the shoulders. An assistant should now draw forward the tongue with his fingers and so retain it Mode of artificial respiration.

CHAP. IV.

between the gums. Standing behind the head, grasp each forearm and extend the arms upwards till they meet directly above the top of the head, thus causing an indraught of air by increasing the capacity of the chest (inspiration). Then bring the elbows steadily down to the sides again, bending them as they travel, and gently press them against the chest, which will be felt to bend in a little, thus expelling the air (expiration). Repeat these motions with about the rapidity of a child's ordinary breathing, until there is a natural attempt at respiration. As far as practicable, regulate the further movements in concert with the natural efforts which are being made, and do not desist till the respiratory function is properly established, and the child cries lustily and persistently. [This is called "*Sylvester's method*," and as it is probably the best and most easily described, it is not desirable to confuse by mentioning others here.]

**How long should efforts continue?**

How long should these efforts at resuscitation be persevered in? The reply is,—not only so long as there is a sign of a spark of life, but for at least half an hour, even though there be no sign of success.

**Subsequent management.**

When vitality has returned, wrap the infant carefully up and place it upon the *right* side with the head and shoulders raised, and if it can swallow, administer five drops of brandy with water.

**Scalp swellings.**

II. SWELLINGS OF THE SCALP are not infrequently observed in the newly-born infant, and may occasion alarm. They are soft and puffy, and are caused by the pressure endured at birth. No treatment is required as a rule. These swellings are unimportant, and will generally subside of their own accord in a few days.

III. BLEEDING FROM THE NAVEL-STRING is to be treated by the application of an additional stout ligature placed nearer to the body than the former one. Navel bleeding.

IV. Should an infant appear to be unable to suck, a medical man should be consulted with as little delay as possible: he will ascertain whether the infant be TONGUE-TIED. Should there be no immediate possibility of obtaining medical aid, the infant must be fed *by means of a spoon* with its mother's milk, or if this be not obtainable, with fresh cow's milk ($\frac{1}{3}$) and warm water ($\frac{2}{3}$) to which a little sugar has been added. Tongue-tied.

Very few children are really tongue-tied. Do not therefore too quickly jump to the conclusion that such is the case, simply because an infant does not *readily* suck. A rare condition.

It may be concluded that the tongue is tied down when that organ cannot be raised from the floor of the mouth by passing the little finger underneath it; when the string is seen to extend nearly to the tip of the tongue; and when, the infant attempting to suck, the milk flows down the breast without entering the throat. How recognised.

It may so happen that in an out-of-the-way district medical aid cannot be obtained. Only under such circumstances of urgent necessity is it justifiable for unskilled hands to undertake the *surgically* simple operation for its relief. In absence of surgical aid.

To operate, place the child in a good light in the sitting posture, its head being firmly held; then take a pair of scissors, the points of which have been carefully ground off, and having lifted the tip of the tongue sufficiently to stretch the string, nip the latter Operation.

CHAP. IV.

slightly, the point of the scissors being held downwards away from the tongue. With the end of the finger gently tear through the remaining obstruction, and the operation is complete.

Non-action of the bowels.

V. Should the BOWELS NOT BE MOVED within the first twelve hours of life, examine the fundament and gently introduce a piece of soap about the thickness of a slate pencil and 1 inch long. Should it be that the skin extends over the anus, and that no opening can be found, from surgical aid alone is relief to be obtained.

Cleft palate.

VI. An infant may be born with a CLEFT PALATE; that is, the roof of the mouth is split from behind forwards. This condition requires great attention in the matter of feeding; there is not the slightest use in giving the child the nipple, or in attempting to use the feeding-bottle in the ordinary way. The child *cannot* suck; if it attempt to do so, the milk will get into the nostrils instead of passing into the stomach. Artificial feeding (Chap. IX.) must of necessity be adopted, using an old-fashioned feeding-bottle, a piece being cut from the top of the nipple sufficient to make a circular opening about so large (O); the child should then be placed in the semi-erect posture, the bottle, about half full of the food, being at hand. The nipple should now be placed in the mouth; and the end of the bottle suddenly tilted up. Of course the result will be a gush of milk down the throat. Almost instantly the end of the bottle is to be again lowered, and after a few moments' interval re-elevated, and so on. The feeding is to be conducted by a series of jerks. A spoon may be used, but it is troublesome and not nearly so effectual.

Mode of feeding.

An ingenious contrivance, which may be obtained from an instrument maker, consists in attaching to the stalk of the ordinary nipple of the feeding-bottle an elastic flap cut to fit the palate. During suction this is forced back and forms an artificial palate, which prevents the fluid from entering the nose and enables the infant to suck.

Artificial palate.

By such means an infant with a cleft palate may be thoroughly nourished and kept in good health till babyhood has passed. Afterwards there will be no difficulty, and at two or three years of age the surgeon will be able, in the majority of instances, to remedy the defect.

Surgical relief at proper age.

VII. PURGING AND VOMITING BLOOD. These formidable symptoms of the newly-born infant are fortunately rare, and when they do occur their duration is brief (24 to 36 hours). The quantity of blood vomited or purged—one or both—seems amazing. The danger is of course great, but a considerable number of cases (some 40 per cent.) recover, wherefore we may be hopeful. Let the infant be kept very quiet, apply moderate cold to the belly and warmth to the feet, feed with a spoon, and don't permit sucking. If there is much exhaustion give a little white wine whey (see "*Receipt*") or a few drops of brandy occasionally. As medicine give 1 grain of gallic acid every hour, and inject gently a couple of ounces of infusion of catechu into the bowel.

## *Section III.—After the First Day.*

The first day of the child's life having been conducted in the way described, and the mother having

CHAP. IV.

assumed her natural office, the subsequent general management of the infant should be as follows:—

Ablution.

It has been said that the first washing may be hastily performed, but this is not admissible with any subsequent ablution, which must be thorough and daily repeated. The word "ablution" is used advisedly in contradistinction to bathing, for the child ought not again to be plunged into the bath till the navel-string has become detached, the object being to preserve the string from contact with moisture, which in India will cause it to smell abominably; besides which, moisture has the effect of prolonging its retention for some days. If the string be perfectly protected from water, it will soon become hard, dark-brown coloured, as dry as a chip, without the faintest odour, and it will usually fall off on the third day.

The navel string.

Nursing.

The infant should be nursed frequently, about every second hour day and night, and no accessory or artificial food should be given to it, for the reasons previously entered into (p. 31). Whether or not the mother's milk be apparent, there need not be the slightest fear of starvation (the argument with which the nurse is pretty sure to appeal to the mother's feelings), unless indeed an aperient has been wrongly administered (p. 33).

The bowels.

The bowels will probably be relieved three or four times each day. On the second day, the evacuations will become of a yellowish colour, the black matter having been for the most part purged off by the first milk; but whether this be completely so or not is a matter of no importance, though it may be urged by the nurse as a reason why the castor-oil, which previously

had been objected to, should be now administered. In very exceptional cases, where the mother's milk does not possess the requisite aperient properties, it may be advisable on the third day to allow half a small egg-spoonful of castor-oil mixed with warm water, to which a couple of grains of carbonate of soda have been added. By this time the conditions which before rendered a purgative directly injurious will have passed away.

Importance of ventilation.

It may here be remarked that during the whole course of a human life there is no period at which thorough ventilation is so much needed, and is of so great importance to vitality (both of mother and child), as it is during these early lying-in days. Dr. Payne, with much labour, has *proved* beyond all gainsaying the frightful effects upon infant life of the conditions in which the lying-in rooms of native mothers in Calcutta are maintained; crowded, every aperture closed, and stifling to the senses. No wonder, then, that one-half the children born to them die within the first fifteen days of life by a "process of asphyxiation!"

Cleanliness.

The early removal of all fouled linen and evacuations of both mother and child is a matter of much importance, and one which if neglected is calculated to affect very injuriously the health and life of the child, more especially in small apartments. There are certain diseases to which the infant is liable under insanitary conditions, particularly in a hot climate, during the first ten or twelve days of its existence which are known to be the direct effects of foul air and dirt; for instance, the native infants of Calcutta die largely from lock-jaw, an almost hopeless condition, which is all but unknown among the European infants

Effects of dirt and foul air.

CHAP. IV.

of the city, and which is the direct produce of dirt, foul air, and insufficient ventilation.

Warmth.

Warmth is still very essential to the infant's well-being; it must not be the warmth of foul air, but the imparted heat of the mother. Foul air will not impart heat, nor will fresh air cause colds or chills. Foul air is at this time a most effectual poison; fresh air conveys life and health, and by increasing the vitality, greatly helps to augment the production of natural internal heat.

Yellow coloration of the skin.

Very frequently an infant's skin becomes of a yellowish colour about the third or fourth day of its life. The colouration may deepen for a day or two, and then it will as gradually subside. This condition is not one of real jaundice, but is due to the changes which the blood is undergoing in the over-congested skin (West), and is of trivial importance, requiring no treatment. It is, however, certain that want of warmth and of ventilation contribute to its appearance (see "*Liver*").

## CHAPTER V.

### NURSING, AND TOPICS RELATIVE TO IT.



As during the next six or seven months of its life the infant should depend wholly upon its mother's milk for its nutriment, this is the proper place to say a few words concerning "nursing."

I have never known injury to be inflicted upon a mother's breast by the application of her infant, before the white milk was to be seen; or, as soon after birth as possible (see also p. 32). The mother should not partake of much fluid till the sense of distention of the breasts has passed off, but when the infant has been sufficiently early applied, there is seldom any trouble on this score. The relief of her bowels daily, by the assistance of simple warm water injections, will materially tend to lessen the likelihood of such an occurrence; it may, however, be sometimes necessary to employ fomentations and gentle frictions, aided by oil, to relieve a painful hard breast. The frictions should be very lightly performed, the hand barely touching the skin when passing from the nipple towards the edge of the breast, but being pressed with gentle firmness when travelling in the opposite direction.

General management of the mother.

It is usual to lay great stress upon the observance of regular hours in nursing. No doubt it is desirable

Hours of nursing.

CHAP. V.

that some effort at regularity should be made, but as a matter of fact it is impracticable to effect much at a very early date. It is impossible to insist that the child have its food only every second hour; still, as age advances, education ought to effect a great deal, till a very near approach to regularity is attained by about the end of the first month, if the child be healthy and the management has been good. If it can be accomplished, every second hour during the day and every third hour at night will then suffice, till about the end of the second month, when about an hour may judiciously be added to the daily periods, while an interval of five or six hours ought to be attained at night, and a gradual increase should be maintained as time passes.

Evils of continual suckling.

The continual application of the child to the breast weakens the mother by the abstraction of more than nature intended to yield, and deprives her of rest. It does the child no good; on the contrary, it brings on indigestion, rejection of milk, flatulency, and diarrhœa from over-feeding. The mother should try to teach her infant not to feed so frequently at night as during the daytime, wherefore, if for no other reason, it should sleep in a separate cot.

Position during nursing.

"An infant should not receive its nourishment lying down" (Dewees). The semi-erect posture is the proper one to adopt; exactly that position in which a mother naturally places her child, when she sits in a chair, nursing. The muscular power of swallowing is, in the infant, very feeble, but by the semi-erect position we avail ourselves of gravitation; the child, when so placed, actually obtains more nourishment, and the apparently causeless rejection of milk is then less frequent.

The nursing mother's diet.

As to the food the mother should use during nursing:—she should abstain from very few things, and be careful to use a variety. Of course, during the lying-in period, the usual simple diet should be employed, but of this I say nothing. Subsequently she should eschew hot curries and highly-seasoned dishes of all kinds, salads, radishes, and uncooked vegetables generally, lobsters, tinned provisions generally, and an excess of solid meat.

Rice, tripe, whipped eggs, sago, tapioca, barley, boiled milk, raw eggs, lamb, parsnips, roasted and baked potatoes, and fricasséed chicken are the most easily digested substances in the order here given: the rice disappears from the stomach in 1 hour, and the fricasséed chicken in 2¾ hours. Beef, pork, mutton, oysters, butter, bread, veal, boiled and roasted fowls are less digestible,—roast beef disappearing from the stomach in 3 hours, and roast fowl in 4 hours. Salt beef and pork disappear in 4½ hours (Parkes).

Vegetables essential.

She should be particular to partake of a sufficiency of vegetables and good fresh meat. There is a prejudice on the part of nurses against vegetables, particularly potatoes. Such folly is based upon ignorance—indeed, we may term it dangerous ignorance. A nursing mother differs not from the rest of humanity as to the laws which govern the physiological process of nourishment, and these declare that if fresh vegetables be excluded, or even very sparingly partaken of, a scorbutic taint of the blood is engendered, which impairs, more or less, the general health, unfitting the mother for suckling, and rendering her milk unwholesome for her infant. Many times by this advice a mother, who never before had done so, because she had previously held fast to the theory of the necessity for excluding vegetables, has been enabled to nurse

CHAP. V.

her child, with perfect health to herself and infant. With such an unfortunate conviction is allied another, namely, that it is essential during nursing to consume a considerable proportion of beer or wine. It is alleged that milk is thus created, and the drain of nursing upon the system is urged as a reason for the necessity of "support." Spirituous liquids *do not* lead to the formation of milk in any degree whatever, and their use in no way compensates for the lack of a proper admixture of food in the diet; nor is it true that nursing is a drain upon the health of any moderately healthy woman—on the contrary, it is known to be beneficial, and that women generally improve in health during its progress. A nursing mother requires, it is true, more fluid than others. She is frequently thirsty. To relieve this thirst, she should drink gruel or barley-water, or milk-and-water, which, besides being drinks, are really nutritious, and therefore milk-forming. Thorough nourishment of the system is certainly demanded, but she does not need extra stimulation, which may render her feverish and deteriorate her milk. The usual glass of wine, ale, or stout need not be denied at dinner-time, and also at tiffin if desired, but such an allowance is ample; more is injurious.

Beer and wines.

Nursing no drain.

Thirst.

Exercise.

Fresh air and exercise are essential to good nursing, but over-fatigue should be carefully avoided. A point seldom attended to—possibly but little known—is that immediately after exhaustion, violent exertion, fright, or a fit of passion, a woman's milk is unfit for an infant's nourishment. Instances of the breast-milk having proved fatally poisonous immediately after great terror are on authentic record; such, however, are rare;

Effects of fright.

but diarrhœa, nervous irritability, and general indisposition are symptoms which usually show themselves under these circumstances.

Menstruation during suckling.

Should a mother happen to menstruate during the suckling period, it is an unfortunate occurrence; but it is not one which should prevent her continuing to nurse, unless the ordinary period of weaning be at hand. Usually, the infant, during the days the function continues, will show some signs of indisposition, generally slight, but which, if at all severe and recurring, proclaim the mother unfit to continue her office; otherwise it is unnecessary that she desist.

Duration of nursing.

The European mother is usually able to nurse for about eight or nine months, if she takes care of her health; but a robust native nurse may often be permitted to continue her duties for a full year.

When unfit to suckle.

Sometimes it happens that a mother is unfit to suckle her infant. (1) Severe constitutional debility, the result of malarial fevers or the influence of the climate, may be a justifiable cause for non-compliance with the dictates of nature, but fortunately it is not a frequent reason, for the general health usually improves during nursing, and the alleged "drain" upon the system is a fallacy in most cases. Sometimes, however, it will prove a reality. Because there have been occasional attacks of ague, or because the system is a little below par, is no sufficient reason that nursing should not be continued; but the debility may be such that the quality of the milk is much deteriorated and unfit for the child; or there may not be sufficient glandular activity to supply enough fluid; or, being supplied, there may not be sufficient general in-

CHAP. V.

herent vitality in the mother to compensate for the loss. Except where the debility is considerable and of long duration, the effort is not only justifiable, but it is a duty. A trial should at least be made. (2) A mother who is subject to epilepsy or other violent paroxysmal nervous disorders should not nurse, both for her own sake and that of her child. (3) Abscesses of the breast, if severe, compel non-nursing. (4) The continual recurrence of intermittent fever is also a fair cause for desisting. (5) The occurrence of pregnancy is opposed to good nursing. The quality of the milk then greatly deteriorates, the mother's system not being able to nourish both the babe at her breast and that in the womb at the same time. (6) If after a fair trial it be proved that the secretion of milk is too scanty to be practically of any use, there is no object in continuing a fiction, but unless the mother be prepared to obtain the services of a wet nurse, it is her duty to continue to give what nourishment she possesses, provided her own health do not suffer, to her infant. Even such very partial feeding increases the chances of the child's life. (7) The nipples may be so retracted as to present a serious difficulty. This point should have been attended to before confinement, otherwise the obstacle may be great; but suction, or the use of Maw's "nipple shield with elastic tube," will usually remedy the defect, if properly employed. Very seldom should this cause be permitted to conquer and to drive the child from its mother.

Wet nurse.

Assuming it to be decided that the mother, from one or other of the foregoing causes, is unable to suckle her infant, there remains but the choice between a wet nurse

Selection of.

and artificial feeding. That the advantages of the former are incomparably greater will presently (Chap. VIII.) be shown. We are therefore led to consider the question of the selection of a wet nurse. It is a matter for congratulation that in India the much-discussed disadvantages connected with this class of servants are reduced to a minimum, as compared with England. A wet nurse should be (1) young but not youthful,—never under 20, seldom over 30. (2) In good health; well nourished, with a sleek skin, free from all eruptions or appearance of former eruptions; free from enlargement of the spleen; possessing a good set of teeth; a clean tongue; red, not pallid, gums; sweet breath, and freedom from enlarged glands in her neck. (3) The date of her confinement should approximate that of the age of the child she undertakes to nurse.

Necessary qualifications.

This is of importance, for the milk varies in nutritive properties in definite proportion to the age of the child. The milk of a woman whose child is 6 months old, even though she have plenty of it, is not fit nourishment for a baby of 3 or 4 weeks of age. It contains too much of some constituents and too little of others.

(4) The breasts of the candidate should be firm and plump, not hanging loosely down, and should contain a good supply of milk of a bluish colour, and which on standing should yield a cream.

"The best test of the goodness of milk," observes Dr. E. Smith, "is derived from observation of the child. He should be watched while at the breast, and if he sucks vigorously, finishes the meal with the milk running down over his lips, and requires suck but five times in the day, we may infer that the milk is sufficiently abundant. If, on the other hand, he constantly requires the breast, sucks laboriously and with effort, occasionally desisting, and crying peevishly, the milk is probably scanty. As an

CHAP. V.

additional test the infant may be weighed immediately before and after taking the breast. The increase in weight should be from 3 to 4 ounces, according to age."

(5) If the woman be menstruating she should be rejected. (6) She should be of a patient and cheerful disposition.

Enquiries to be made.

Enquiries should be made (1) into her previous history, concerning any illnesses she may have had, whether she ever suffered from any sickness which involved prolonged sore throat, eruptions of the skin, or ulcers. If such be the case, she should be rejected. (2) Concerning her husband and his health, present and past, the enquiries last-named should be instituted. (3) Inspect the woman's infant, assure yourself that it is hers and not a borrowed one, consider its age with regard to her statement upon the point, observe whether it presents a healthy appearance generally, and be particular to notice whether there are any sores between the buttocks or at the corners of the mouth. The presence of such sores would call for the rejection of the candidate. (4) Let particular enquiry be made as to whether the woman is in the habit of smoking ganjah or opium; should either be the case, she should be rejected. (5) Under inspection, the breasts should be emptied by her own child, or artificially, and the woman directed to present herself again after the lapse of a few hours, in order to ascertain whether she really possesses a sufficient supply of nourishment, and that she has not attempted fraud by having permitted a large accumulation.

Future management of wet nurse.

With due attention to all these points, a wet nurse having been selected, her future management becomes

of importance. In the first place, she should have a warm bath and wash thoroughly all over, after which, and when clad in clean warm clothing, she may commence her duties. The next thing is to be careful not to overfeed her, or even to place her too quickly on a liberal diet; but to have due regard to her previous diet and mode of life. By sudden overfeeding, the milk may very greatly diminish, or become of such a character as to be injurious. Let her be employed as much as possible in general household duties to ensure a proper amount of exercise, and cause her to move about occasionally, with the infant in her arms, to provide for its exercise. A wet nurse is too frequently allowed to moon away her time in idleness. She is then apt to lose her milk, indigestion will set in, she will become feverish, and her milk unwholesome and irritating. To violent exertion she should never be subjected (p. 46). Do not allow the child to sleep with the nurse at night. See that regularity as to its meals is observed, and that it be not continually hanging on to the breast. Hot curries, chutnies, or too much meat must not be allowed to the nurse. Be very particular that vegetables constitute a due proportion of her diet. Allow her plenty of sleep. Be sure that the woman's own child be kept at a distance, lest she devote part of her nourishment to it. For further details the reader is referred to the previous pages of this chapter.

Teach the bottle.

After the first 10 days or so of life have passed, it is well, in India, to "teach the bottle" to an infant, because of the liability to intermittent fever and other derangements, which may temporarily unfit a mother or nurse for suckling. It is not recommended that the

CHAP. V.

bottle be employed at this period for the administration of nourishment, but merely that *its use* be taught to the infant with a view to enabling it to meet emergencies. A dessert spoonful of milk with 4 or 5 of warm water and a minute portion of sugar, given through the bottle once or twice a day, will effect the needful education, which, if not commenced early, will be accomplished subsequently only with great trouble and delay, if at all. The old-fashioned *feeding bottle* without tubes of any kind is to be preferred, because it can with great facility be thoroughly cleaned, any particle of old food adhering to it being readily seen, except if concealed in the nipple, which should always stand in a glass of cold water after careful washing when not in use*; and because it ensures due attention to the process of feeding on the part of the nurse, who is compelled to hold the bottle in her hand all the while.

Feeding bottle.

When mother's milk does not agree,

In exceptional cases the mother's or nurse's milk does not seem to suit. The infant becomes fretful and griped, and its rest is very disturbed, while at the same time there may be either vomiting, diarrhœa, or constipation.

being too rich,

In such a case the milk may be too heavy for the child's digestion. It will not be sufficient merely to diminish the quantity by alternating meals of other forms of food, for still the pure milk has to be disposed of. A good plan is to give half a meal of barley-water (see "*Receipts*") from the bottle immediately before putting the child to the breast, with the object of diluting the milk when it

* Better still, place the washed nipple of the bottle when not in use in a solution of boracic acid (2 or 3 grains to the ounce of water), and the bottle itself may be rinsed out with the same solution.

reaches the stomach. A few grains of bicarbonate of soda may be given after each meal. On the other hand, the mother's milk may be too poor and watery, though abundant. Then the child constantly demands the breast, because he is always hungry. It will then be necessary either to change the nurse, or supplement the breast milk by some other form of suitable diet (Chap. IX.). It is said, and apparently with truth, that when an infant who is not thriving sleeps much with the nipple in his mouth, and only then, it is a sign of watery milk. The reader is referred to Chap. IX. for further information upon the subject of milk disagreeing with the infant (p. 97).

or, too poor.

## CHAPTER VI.

### THE PRINCIPLES OF DIET,

AS APPLICABLE TO CHILDHOOD—MILK—FARINACEOUS FOODS—INTERMEDIATE FOODS—WATER.

CHAP. VI.

General principles of diet.

HENCEFORTH it will be impossible to follow the child's life step by step. We must therefore consider each point involving its existence in detail. To enable the parent to understand the proper mode of feeding her child, it is desirable to state briefly the general principles of diet as applicable to the infant.

What is an alimentary principle?

Every human being, whether infant or adult, must consume not only nourishing food, but he must have a proper admixture of the different elements of food, or alimentary principles, as they are termed. Bread, for instance, is a food, but it is not an alimentary principle; on the contrary, it contains some of all these principles. A pudding is a food, but we know that it has been made with so much flour, so much butter, so much fruit, &c. Any one article of food which can be named is just as much a mixture as is a pudding. Milk is as simple a food as can be conceived, yet in reality it is a complex mixture of the different alimentary principles. We know that it contains a quantity of water, which is an alimentary principle; that it contains oil (termed butter), which is another principle; that it contains curd,

which is another, and so on. The same holds good of bread, or beef, or vegetables, and all other foods. This is what is meant by alimentary principles.

Classification.

Classification :—

1. Albuminous, of which the curd of milk is typical.
2. Fats, represented by butter in milk.
3. Carbo-hydrates ; sugar, starch, gum, &c.
4. Salts, mineral.
5. Water.

All must exist in food.

Of each and all of these, humanity must have a definite proportion in its food. Instinct of the appetite guides the healthy individual, but the infant is provided, in its mother's milk, with the exact alimentary proportions necessary for its perfect nourishment. Human milk, for instance, contains in 100 parts, roughly speaking, $3\frac{1}{2}$ to 4 parts of the albuminous principle, 3 of fat, 4 of sugar, $\frac{1}{4}$ of a part of salts, and 89 parts of water.

Proportions vary with age.

As life proceeds, the proportions requisite alter greatly, so that in ratio to its weight the child of ten needs three times as much fats and carbo-hydrates as the adult, and six times the proportion of albuminous nutriment. Again, the child requires a greater proportion of food relatively to its size than the adult, because of its extremely rapid growth, by which much nutriment is utilised for the building-up process; because the waste consequent upon the ever-active life is great; and because respiration, which is one of the chief means of combustion or consumption of material, is especially active in childhood.

Milk unsuitable for all ages.

These conditions change further with age ; hence the qualities of the food must also change. An adult,

CHAP. VI.

for instance, could not be wholly fed upon milk, because to enable him to obtain a sufficiency of albuminous aliment he should consume not less than eleven pints daily, and then the amount of fat would be greatly in excess.

Effects of improper proportion.

A human being cannot exist upon any one class of aliments, nor yet upon any three to the complete exclusion of one. If an animal be fed exclusively upon any one for a length of time, its health will rapidly become impaired to such an extent that even a return to its natural diet may not save its life. Similarly, if inferior milk be given to an infant, or if the artificial milk-food be improperly prepared by too much or too little dilution or otherwise, it follows that evil results will assuredly ensue, because there will be excess or defect of some one or more of the ingredients.

The salts; their nature and use.

The expression "salts," it should be noted, is by no means analogous with what is implied when we talk of common salt. They are compounds of lime, soda, and potash, and are of great importance in the vital process, as they are especially concerned in the currents of nourishing fluids which pervade every part of the body, including the glands of the breasts, which, without their aid, would not be able to secrete perfectly; hence, as before stated (p. 45), the mother who excludes vegetables from her dietary runs the risk of losing her milk and impairing her health, while she denies her infant those numerous salts which are essential to its perfect nutriment, and which should be largely supplied to her blood and her milk, through the judicious use of proper vegetable food.

MILK.—In all kinds of milk the five alimentary principles exist, though in very varying proportions.* It is, therefore, evident that the young of animals fed upon each kind in reality obtain a wholly different sort of food, and it requires no argument to prove that the milk of one is therefore an unsuitable food for the young of another. Comparing the milk of the cow with that of the woman, we find that, while the amount of water is less, that of the solids is much greater, the fatty, saline, and albuminous matters being in excess, while the sugar is diminished. Moreover, cow's milk is slightly acid, while human milk is alkaline. Hence it is usual to reduce the quantity of butter and curd by dilution, and to add sugar and lime water in order to imitate the woman's milk; but no proportion of dilution will effect an exact imitation.

Milk.

The varieties represent different kinds of food.

It is usually believed that ass's milk is the nearest in quality to that of the woman, but this is an error.

Ass's milk.

* COMPARISON OF HUMAN MILK WITH THAT OF DOMESTIC ANIMALS. (*Pavy, after Payen.*)

| | Woman. | Cow. | Goat. | Sheep. | Ass. | Horse. |
|---|---|---|---|---|---|---|
| Nitrogenous and insoluble salts | 3·35 | 4·55 | 4·50 | 8·00 | 1·70 | 1·20 |
| Butter | 3·34 | 3·70 | 4·10 | 6·50 | 1·40 | 0·20 |
| Lactine and soluble salts | 3·77 | 5·35 | 5·80 | 4·50 | 6·40 | 8·75 |
| Water | 89·54 | 86·4 | 85·60 | 82·0 | 90·5 | 89·33 |

CHAP. VI.

It contains more water, is much poorer in curd and butter, and has an excess of sugar and salts; but it is sometimes very valuable for children who are too delicate to bear cow's milk, because it is very easy of digestion, though sometimes it causes diarrhœa owing to the amount of salts in it. If a healthy infant be fed upon ass's milk, a much larger quantity will be needed to make up the requirement of butter and albuminous substances, but then the salts and sugar will be much in excess. Ass's milk, therefore, is not an appropriate food for a healthy infant. The addition of cream would remedy the chief defects, but cream is not easily obtained in India.

Cow's milk.

The milk of the cow is the closest approximation, though each kind of the solid ingredient is in excess.

Goat's milk.

Goat's milk contains a large proportion of curd, and the salts are much in excess. Still this milk may be used with advantage for the rearing of children. But the goat is a very promiscuous feeder, and it is well known that the nature of the food greatly affects that of the milk. It is quite familiar to every one that purgatives administered to a nursing mother will readily produce an effect through her milk upon the infant's bowels. Hence it is needful that a goat whose milk is used should be tied up within the range of only wholesome food. Neglect of this precaution has led to a prejudice against goat's milk, which is frequently found to produce irritating effects when the animal is allowed to wander about.*

* Owing to the danger of hereditary disease to the nurses of the *Hôpital des Enfants Assistes* in Paris, goats' was substituted for human milk, but the infants did not thrive. Now 10 asses were

Examination of milk.

*Examination of Milk.*—The lactometer is usually relied upon by the public as a means of judging the quality of milk, but it is a faulty instrument, because, although it may in the cold weather sink to the letter M, which is supposed to indicate that the milk is pure, the very same quality of milk in hot weather will appear, when tested by it, to contain 15 or even 20 per cent. of water. It is better, therefore, to use the hydrometer (fig. 1) (which is the same instrument, except that in the place of a letter indicating the purity of milk, and figures representing that so much water had been added, there is a scale of figures from above downwards—0, 10, 20, 30, 40, and 50, between which there are graduations indicating units), and to apply a correction for temperature, which Parkes gives as follows:—

Lactometer, faulty means.

Hydrometer.

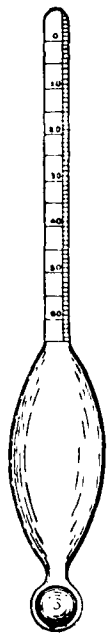

FIG. 1.

| | |
|---|---|
| 39° F = 1031 | 80° F = 1027½ |
| 60° F = 1030 | 90° F = 1025½ |
| 70° F = 1029 | 100° F = 1024 |

That is, at any of these temperatures the hydrometer will mark the specific gravity as above, if the milk be pure; but if the specific gravity, as read on the hydrometer, be lower, it is an indication that water has been added. If, for example, the temperature of

procured. Each was found capable of nourishing 3 children besides its own young for the first three months, and two children for the following two months. After this period each ass was capable of nourishing one child until the ninth month (*B. M. J.*, Feb. 1887). This is strong evidence in favour of ass's milk, but possibly the explanation of its superiority is that suggested in the text.

CHAP. VI.

the milk is found to be 65°, and the specific gravity to be 1025, we know that a considerable quantity of water has been added, though had the temperature of the milk happened to have been blood-heat, the above specific gravity would indicate purity. In this example, we see by reference to the table that the specific gravity ought to have been 1029½ instead of 1025, which represents a loss of 4½, showing that 15 per cent. of water has been added, as the next paragraph explains.

There is a loss of 3 degrees as marked on the hydrometer for every 10 per cent. of water added when the temperature of the milk is about 60 degrees.

| | | | |
|---|---|---|---|
| Thus pure milk will mark . . . . . | | | 30* |
| Milk diluted with about | 15 | per cent. of water . | 26 |
| do. | 20 | do. . | 23 |
| do. | 35 | do. . | 18 |
| do. | 45 | do. . | 15 |

When milk has been skimmed, even though it may be diluted with water, the specific gravity will be higher, and similarly a milk which is particularly rich in cream will show a lower specific gravity. Hence another source of fallacy in this method of estimating the quality of milk. As a matter of fact, chemical analysis is the only reliable means.

Another plan.

Another very simple plan is to gum a piece of paper, which has been marked into 100 equal parts, to the outside of a long glass tube, the lower numbers being uppermost. Fill it with milk to be examined, and allow it to stand for 12 hours at least, in a place sheltered from all wind. The cream will rise to the surface, and the number of degrees (that is, the per-

* These numbers are to be read as 1030, 1026, &c., water, which is the standard, being 1000, and marked 0 on the scale.

centage) occupied by it may be read off. Usually it ought to occupy 8 to 11 degrees. Macnamara objects to this test for India, because the climate causes such quick coagulation of milk that it prevents the cream rising rapidly, but in the cold weather the objection does not apply.

Cow's milk is acid.

Cow's milk ought to be faintly acid, and this is ascertained by dipping into it a scrap of litmus paper (which is of a blue colour, but) which will turn pinkish if it be moderately acid, and red if very acid; the latter condition indicating commencing fermentation and necessitating the rejection of the milk. Of course if chalk has been added the litmus paper will not change colour; a sick cow will also usually yield alkaline milk. Woman's milk, on the contrary, is alkaline; it will never turn litmus paper red. For this reason, before cow's milk is given to a baby, it is usual, indeed it is necessary, to add a proper proportion of lime water to it. This removes the acidity, a fact which should be verified by the use of litmus paper, some of which should always be kept in the nursery.

Woman's is alkaline.

Use of litmus paper.

Combine the tests.

When it is desired to ascertain the quality of milk with an approximation to accuracy, all three tests—(1) litmus paper, (2) specific gravity, and (3) the amount of cream—should be combined to yield a correct result.

Milk curdles in the hot weather.

It is well known that milk will soon curdle if it be exposed to hot weather, or if it has been kept in a vessel which contained any traces of former milk which had turned sour; but the housekeeper may sometimes be sorely perplexed by the fact that milk, which has been seemingly all right, upon being boiled curdles and

CHAP. VI.

Milk curdling upon being boiled.

becomes unfit for use. Now this is accounted for easily enough—fermentive change has already commenced, and the lactic acid thus generated is insufficient to produce a manifest effect at ordinary temperatures, but it is sufficient to do so at a greater heat. Such an occurrence, therefore, argues that the milk has been in contact with an impure vessel, or that the boiling has been delayed till the weather has had time to commence fermentation. Milk which behaves in this way is unfit for an infant.

Milk for the journey.

Milk may be preserved for a short journey by boiling it, adding sugar, and while hot putting it into very clean bottles, which should be quite filled. Then and there the bottles should be corked and sealed. Another plan is to add ten grains of bicarbonate of soda to each pint, and bottle it without boiling. By these means milk will keep good for some days in moderate weather.*

Boiled milk.

It used to be thought that milk which has been boiled does not possess quite the same nutritive value to the young infant as raw milk, but the evidence in this direction is very weak, and now most authorities advocate boiling as a means of sterilising the milk. The advantages of destroying all germs which may have gained access to the milk are obviously great, and the disadvantages of boiling, if any, very doubtful. In a climate like India it is therefore proper to boil the milk in all cases.

* Milk which has been sterilised by means of steam will keep for months. To accomplish this the milk is to be put into bottles which are to be placed in a drainer over water in a saucepan, and

Quantity of milk consumed by an infant.

As to the quantity of milk an infant requires;—a series of experiments conducted in Paris by weighing infants before and after feeding, and other observations, have led to the conclusion that a healthy baby aged 3 months will extract from its mother nearly half a pint of milk at each meal, and allowing five such meals daily, the total quantity will be about 2 or 2½ pints. This fact will serve as a guide to the quantity of food an infant, which is being artificially fed, requires. Meigs and Pepper, who have entered very fully into this subject, allow 10 ounces (ten meals of 1 ounce each) for an infant of 2 or 3 days of age; thence to the fifteenth day, 15 ounces; thence to the end of the first month, 1½ pint or more. In the second month, 32 ounces, divided into eight meals. In the third month (seven meals, one every third hour during the day and two meals at night) 35 to 42 ounces. "As the age increases, 8 ounces may be given at a time, five times between 6 a.m. and 10 p.m. and once in the night, making five or six meals, and therefore 40 to 48 ounces per day. This amount of food is scarcely greater than in the second and third months, but by this time it is much stronger."

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shut in. The saucepan is now placed upon a fire and the water boiled for 20 minutes. Cork the bottles and keep in a place as cool as possible. It is better not to use a single large bottle. The bottles should have been carefully washed with a solution of boric acid (30 grains or so to 1 pint of water) immediately before receiving the milk. The corks should have been soaked in the boric acid solution. A chemist could thus sterilise milk over a "water-bath," as it is called, for a journey and save others the trouble, but there is no real difficulty about it.

CHAP. VI.

Goodhart tabulates these points conveniently:—

| Age. | Intervals of feeding. | Number of meals in 24 hours. | Quantity per meal. | Quantity in 24 hours. |
|---|---|---|---|---|
| | | | Ozs. | Ozs. |
| 1st week ... | 2 hours | 11 | 1½ | 16—18 |
| 2nd & 3rd week | 2 ,, | 10 | 2—2½ | 20—25 |
| 4th week ... | 2 ,, | 10 | 2½—3 | 25—30 |
| 5th ,, ... | 2½ ,, | 8 | 4 | 32 |
| 6th ,, ... | 2½ ,, | 8 | 4½ | 36 |
| 7th & 8th weeks | 2½ ,, | 8 | 5 | 40 |
| 3rd, 4th, & 5th months | 3 ,, | 6 or 7 { 7.10.1 / 4.7.10.1 (?) | 7 or 6 | 42 |
| 6th month and onwards | 7.10.1.5.9 1(?) | 5 or 6. | 8 or 7 | 42 |

Alterations in breast-milk with lapse of time.

The length of time which has elapsed since confinement considerably affects the quality of the milk. The water and sugar diminish during the first month; the solids increase up to the fourth month; the butter increases up to the sixth month; the salts at first slightly increase and then decrease. Hence the necessity for the date of the nurse's confinement approximating that of the birth of her nursling.

Sugar of milk.

The sugar which milk contains is not the substance which we know by that name. "Sugar of milk" closely resembles grape sugar in quality, and it comports itself similarly in the stomach. Sugar of milk may be procured from the chemist, and should always be preferred to common sugar for addition to infants' food, when it can be obtained.

FARINACEOUS FOODS.—All articles of a farinaceous kind, such as bread, arrowroot, corn-flour, sago, rusks, biscuits, &c., are in every way foreign to the diet of the infant before the period of dentition. "Constituted in great part, as these articles are, of a principle (starch) which has no existence in milk, and which requires to undergo a certain kind of digestion to fit it for absorption, it is presumable that the digestive organs are not adapted at this stage properly to meet the demand that is made when these substances are consumed. From the fact that they are light and nourishing for older children there is a popular tendency to regard them as forming suitable food for early infancy, but all authorities concur in condemning them as improper for use at such a period. It is true, later on they represent the most appropriate solid material to begin with, but this is when the digestive organs have reached a more advanced stage of development" (Pavy). Dr. West puts the case even more strongly: "You are aware," he says, "that physiological and chemical research have proved that food has two distinct purposes in the organism, the one to furnish materials for the growth of the body, the other to afford matter for the maintenance of its temperature; and that life cannot be long supported except on a diet in which these elements bear a certain proportion to each other. Now in milk, the proper food of infants, the elements of the former are to those of the latter in the proportion of 1 to 2, while in arrowroot, sago, and tapioca they are only as 1 to 26, and even in wheaten flour only as 1 to 7. If to this we add the absence of oleaginous matter, which the milk contributes to supply the body with fat (and which can be eliminated

Farinaceous foods are foreign to the diet of early infancy.

Pavy's opinion.

West's protest.

CHAP. VI.

only by a conversion of their elements, to which the feeble powers of digestion in early life are not equal), and the smaller quantity, and to a certain extent the different kind, of the salts which they contain, it becomes at once apparent that by such a diet the health, if not the life, of the infant must almost inevitably be sacrificed." "A child is not nourished," observes Dr. Eustace Smith, "in proportion to the bulk of the food he receives into his stomach. He is only nourished by the food he can digest. . . . Among the poorer classes children are commonly fed upon farinaceous food as soon as they are born. This, of course, they are totally unable to digest. As a consequence they dwindle and rapidly die, or if of a particularly robust constitution, linger on, weak, ailing, and rickety, until an attack of bowel complaint or other intercurrent disease carries them off."

E. Smith's experience.

So immensely important is the appreciation of this matter, that I have preferred thus to quote acknowledged living authorities than to give my own words. Farinaceous food is *never* to be substituted for milk, nor should it be presented to the infant in any form or quantity till dentition justifies it. Rest assured that should ignorant anxiety lead to deviation from this simple rule, the mother will, in nine cases out of ten, rue the result. Even after the teeth proclaim the fitness for more than mere milk, too large or too sudden an addition will pretty certainly be attended with illness. Without a sufficiency of milk, and with the addition of an irritating substance, the child can only live through accident, so to speak,—the chances are it will die.

Immense importance of this matter.

Anatomical arguments.

An infant's digestive system, in its anatomical details, resembles to some extent that of the flesh-eating animals, especially in the shortness of the length of the intestine, indicating that it is fit to receive only animal food. The saliva is not secreted at all during the first few months, nor has the pancreatic fluid any action upon starch till the end of the third month. A transition is, however, gradually working, and is partially effected when the teeth appear, and these secretions begin to be able to act upon starch, to digest which they are as necessary as is fire to the baking of the loaf. The system becomes each month more and more fitted to utilise farinaceous food, and milk alone becomes less and less adapted for sole and perfect nutriment, though it still must constitute by far the chief proportion.

Results of such food before the proper time.

Farinaceous food, then, before the system is ready for it, is, in the first place, an irritant (and as such indirectly a poison), and, in the second place, it will effectually starve the infant.

But milk is the only kind of animal food wholly suitable.

Let it not be argued that animal food being anatomically indicated, soups, &c., may with impunity be substituted for milk. Such would be a fallacy, less fatal, perhaps, than unbounded belief in cornflour and arrowroot, yet beyond doubt a dangerous fallacy. For such forms of animal food, as well as for farinaceous substances, Nature, in her own good time, will effectually prepare the way, but she will not brook being tampered with; she will resent interference in a manner which usually conveys a warning, but which renders resistance not only futile, but disastrous.

Nature, in due time, prepares for both kinds.

Intermediate foods.

INTERMEDIATE FOODS.—There is a class of malted

CHAP. VI.

foods, which the genius of Liebig has given to the world; but as it will be more convenient to discuss them when investigating the subject of artificial feeding, their consideration will be deferred for a future page (Chap. IX.). It will suffice to mention here that this class consists of farinaceous foods which have been chemically acted upon, whereby many of the objections stated in the last section are removed, the work of the salivary and other glands is already accomplished, and the irritating properties are lessened.

Peculiarities of.

Popular error.

Unfortunately, the public usually regard these foods simply as varieties of the "infant foods" which are everywhere puffed and advertised; but they are nothing of the kind. It is hoped that the remarks and explanations subsequently to be made will lead some to appreciate their real value and to use them with discrimination, by which expression it is intended to convey that they should not ordinarily be used at all without a clear indication, unless the age for the introduction of a farinaceous food has been attained.

Water.

WATER.—As a very important article of diet, it is essential to understand many things about water.

Liberal supply necessary.

The child, in proportion to its size, requires more water than the adult. It is a cruel and hurtful thing to deny the free use of water to children, as is sometimes done. The error of taking too much is not likely to be committed; but without a sufficiency, the mobility of the fluids (that is, the process of nutrition) is directly impaired, the incoming nutriment is not thoroughly dissolved, nor is the solution of the worn-out tissues (waste) sufficient to enable their removal through the kidneys, skin, lungs, and bowels.

It is quite possible that a child may acquire the habit of drinking water more constantly than is necessary, and it may even be right to check the habit to some extent. But what harm can an abundance do? Very little, if any, while a stinted allowance may do much. Fortunately the sensation of thirst is so imperious as to permit but little interference. There are circumstances under which it may be right to withhold water for a short time, but they are very rare. A child should not be allowed to acquire the habit of drinking largely at the commencement of a meal, because the heat which is in the stomach, and which is necessary to digestion, is abstracted. A little later on in the meal, when the stomach has "warmed" to its work, the objection vanishes In many cases of prolonged and debilitating illness, the drink as well as the food should, for this reason, be given only after having been slightly warmed, although cold food and drink may be more agreeable.

Circumstances justifying restriction.

The plentiful supply of cold drinking water is one of the most powerful means of reducing the heat of the body, and it is also essential to supply the great loss by perspiration. "After compensating for the loss by the skin and with the breath, the surplus passes off through the urinary channel, and it is desirable that this surplus should amply suffice to carry off the effete products forming the solid matter of the urine in a thoroughly dissolved state. The notion has been started that it is advisable to restrict the amount of fluid taken with the meals with the view of avoiding the dilution of the gastric juice. Whether as the result of the influence of this notion upon the public mind or not, mischief, I believe, is frequently

Physiological reasons for free supply.

"Dilution of the gastric juice"—a fallacy.

CHAP. VI.

occasioned, especially amongst the higher ranks of society, by a too limited consumption of fluid. . . . It is a mistake to suppose that when we drink with a meal we are diluting the gastric juice. The act of secretion is excited by the arrival of the meal in the stomach, and the gastric juice is not there at the time of ingestion. It happens, indeed, that the absorption of fluid takes place with great activity, and the liquid which is drunk during a meal becoming absorbed may be looked upon as proving advantageous by afterwards contributing to yield the gastric juice which is required" (Pavy).

On the contrary, water increases its production.

But water is liable to many impurities, and it is essential that the importance of a really pure supply be understood. A very hard water is apt to cause dyspepsia and perhaps stone in the bladder if continuously used. "There is conclusive evidence to show that the most serious consequences have arisen from water polluted with organic matter. This, in fact, is the impurity that is most to be dreaded. Outbreaks of diarrhœa have been very distinctly traced to the use of contaminated water of this kind. It is acknowledged to be one of the most common causes of dysentery, and has been alleged, when derived from a marshy district, to be capable of inducing malarious fever and its concomitant enlargement of the spleen. From the facts that have been recently made known, there can be no doubt that typhoid fever has been frequently communicated through the medium of water. Some well-established instances have lately been brought to light where milk adulterated with polluted water has been the cause of serious outbreaks

Evils and dangers of drinking impure water.

of fever. . . . Cholera is another disease which may be considered as having been traced to contaminated water, and probably this forms the chief mode of its spread through a community" (Pavy). Several forms of intestinal worms may also be propagated through the medium of water.

Ordinary modes of contamination.

The ways in which water is liable to contamination in India are numerous. The bheestie's rope and leathern bucket are often kept in a dirty hovel, and when polluted, it may be with distinct disease-germs, lowered into the well; the sides of tanks are used as convenient places for the offices of nature; drainage from foul surfaces is permitted to trickle or percolate into wells; washing and bathing take place near wells, &c. Then, the bheestie is not too particular whence he obtains his supply, provided it saves him a journey; the interior of his mussuck is frequently contaminated by drawing foul water for horses, &c., and subsequently filling the same mussuck with the domestic supply. Nor is the milkman over-careful whence comes the diluent which he deems essential to his profits. Again, in a warm climate, where fermentive changes are so rapid, contaminated water is doubly dangerous, particularly when added to an animal fluid like milk, which fosters germination and the growth of disease-germs.

Waters to be avoided.

Tank water, being liable to so many sources of contamination, should, as a rule, be avoided. Water taken from a large and quickly-running river is usually better in spite of the impurities it receives, because its motion acts as a purifier. Water obtained from a source closely surrounded by the dwellings of men should be

CHAP. VI.

avoided; surface and marsh water should be rejected as unfit for use.

Filtration. The "gurrah and sand" filter to be discarded.

The drinking water should always be filtered; but the old gurrah sand-and-charcoal filter, with its open surface, should not be used. Some years ago Dr. Macnamara showed the fallacy and even danger of those filters.

Since then, the late Dr. Lewis, who added so much to our knowledge in many matters, has connected the mosquito, which deposits its larvæ on the edge of standing water, with certain kinds of microscopical entozoa which he discovered in the blood of man, and which are disseminated in swarms, causing to its victims bloody urine and elephantiasis, and producing nervous and febrile states.

Best kind of filters.

Professor Notter is inclined to condemn the use of filters altogether, considering the wide-spread indifference as to their care, and the ignorance of the public regarding their nature and uses. The mere possession of a filter, he points out, often conveys a false sense of security though a neglected filter may represent an increase of danger. The "Chamberlain-Pasteur" filter, which is portable, Dr. Notter considers to be 'admirably adapted to India," and he also approves highly of "The Morris Filter" for household use in India.

Other means of purifying water.

Other means for the purification of water may with great advantage be adopted, or they may be employed as auxiliary to a reliable filter. They are:—

(1) Boiling, which, especially if repeated at intervals, is very efficacious.

(2) Alum added in the proportion of about six grains to one gallon will clear a muddy water and throw

down suspended matter. After the addition, the water should stand for twelve hours before use.

(3) Lime water added also throws down suspended matter.

(4) Condy's fluid and alum are efficient.

"Add teaspoonful by teaspoonful to 3 or 4 gallons, constantly stirring. When the slightest pink tint is perceptible stop for five minutes; if the tint is gone, add 36 drops, and then, if necessary, 30 more, and then allow to stand for 6 hours; then add for each gallon a solution of 6 grains of alum, and if the water is very soft, a little carbonate of soda, and allow to stand for 12 or 18 hours. If not clear, or if discoloured, filter through charcoal."—[Parkes.]

How to cleanse a block filter.

To the block filter, which is the kind in most general use, there are many objections, but when it is employed it should be cleansed occasionally in the following way:—Every couple of months air should be blown through, and the charcoal brushed. Then four to six ounces of Condy's fluid in a quart of distilled water and 10 drops of strong sulphuric acid should be poured through, and, subsequently, a quarter to half an ounce of strong hydrochloric acid in 2 to 4 gallons of pure water. Three gallons of distilled or good rain water should then be poured through, and the filter is again fit for use. The employment of sponges as part of a filter is to be condemned, but if they are used they should be frequently removed and boiled.

## CHAPTER VII.

### DENTITION AND ITS MANAGEMENT.

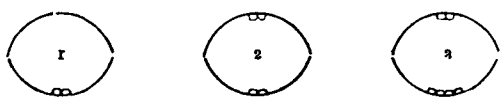


Two periods of teething.

THERE are two periods of teething, the first in infancy, the second in childhood. The germs of the first (milk or temporary) set have existed within the jaw for several months before birth, but they are at no time covered with true bone. As ossification advances, the tooth rises, and pressing upwards, causes absorption of its capsule and the gum, till by their removal the tooth makes its appearance. This upward progress, in its later stages, is what we mean when we talk of "teething." The temporary teeth usually appear in the following order:—

Origin of the first set.

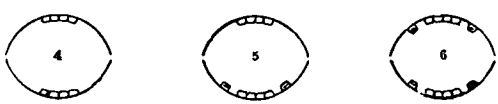
Order of appearance.




1. The two middle cutting teeth of the lower jaw, at about the seventh or eighth month.

2. The corresponding teeth of the upper jaw, at about seven and a half or eight months.

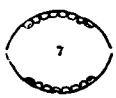
3. The two lower lateral cutting teeth, at about the ninth month.

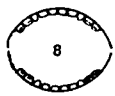


4. The corresponding teeth of the upper jaw, at the tenth month.

5. The two front grinders of the lower jaw, from twelve to thirteen months.

6. The corresponding teeth of the upper jaw, at about fourteen months.




7. The four eye teeth in the vacant spaces, between the sixteenth and twentieth months.

8. The second grinders, between the twentieth and thirtieth months.

Origin of the second set.

With the appearance of these twenty teeth the first dentition is completed. Strange as it may appear, the germs of the second set also existed in the jaw before birth, more deeply seated than those of the milk teeth.

Order of appearance of the second, and shedding of the first set.

At about the 6th or 7th year a grinder appears behind each of those already existing, making a total of 24 teeth, and soon after their appearance the central front teeth fall out, their roots having been absorbed by the advance of the young permanent set. About a year is occupied in shedding the four central cutting teeth (fig. 2), and another year by the four outer cutting teeth (fig. 4). During a third year the front grinders (fig. 6) are similarly replaced. Next, the second temporary grinders, and lastly, the eye-teeth are shed at any time from $9\frac{1}{2}$ to $12\frac{1}{2}$ years, while a little later, four new grinders show themselves, making 28 teeth. Between 17 and 21 years, the last four grinders, or the "wisdom teeth," complete the full set of 32.

CHAP. VII.

Teething is frequently irregular.

The order above related is not invariably followed. On the contrary, deviations are numerous. Children have, rarely it is true, been born with teeth, and children have reached the age of 1½ year without a tooth showing, but the above description is the general rule. Very frequently the side cutters of the upper appear before those of the lower jaw, and often the temporary eye teeth fall out before any of the grinders.

Indication of delay.

As a rule, a healthy child teeths with a close approach to regularity. Delay in the appearance of the teeth usually argues want of development, consequent upon some constitutional fault; but strumous children frequently teeth very early.

Circumstances influencing ease of dentition.

In England it is an observed fact that the first dentition is passed through with less trouble during the summer than the winter, in the country than in large towns, and, as might be anticipated, by healthy than by delicate children.

Most of those who are best entitled to give an opinion as regards India, hold that teething is a process which, *per se*, proceeds with moderation, and such I am persuaded is the case. Sir R. Martin observes, "It may be said that under ordinary care in diet and clothing

Proceeds mildly in India.

the operation of teething proceeds kindly in the climate of India; and speaking from my personal experience I should say that severe teething irritation is seldom a primary affection, but that, on the contrary, it generally follows upon previously existing gastric, intestinal, or febrile disorder; and it is not too much to say that in 18 cases out of 20 these last are but the result of mismanagement and weakness, more common to the most civilised than to the most barbarous communities;"

and he adds, with as much force as truth, "to read some books and to hear some people talk, one might be led to suppose that the teething process of infancy is a *morbid* one from beginning to end." Every affection, whether it be a trivial skin eruption, or a fatal diarrhœa, is usually attributed to teething, should such complications happen to occur during its progress. An unfortunate infant who is poisoned with some variety of cornflour, dies of diarrhœa; or, during the course of this affection, a convulsion ends the brief life, whereupon, death is without hesitation attributed to teething. Another, carelessly exposed to malarial influences, is attacked with fever, and similarly perishes in a convulsive fit,—again teething is blamed; while down the throat of a third are thrust lumps of meat and highly-seasoned curries, and the usual bloody bowel evacuations which of course succeed, are, the parent thinks, due to teething.

Popular tendency to attribute all coincident ills to teething.

It is not for a moment intended to be affirmed that teething has no influence on the constitution. It has this influence, that the nervous system, already possessing high susceptibility, is then still further exalted in its sensibility, but it is not true that nature has subverted one of the natural processes of growth into a mode for slaying an indefinite number of infants. No doubt through carelessness and bad management, the mortality is higher during teething than if there were no such process in nature; possibly, even with all due care, a few of the more delicate might be cut off in consequence of the additional state of nervous tension, but teething never did kill anything like the number of infants whose deaths are attributed to it. Growth is at its

The real extent of the effect of teething.

CHAP. VII.

period of most rapid progress, "increased activity of all the physiological functions at work necessarily implies greater risk of friction between one organ and another, or even of a regular breakdown. Excessive energy, if not properly regulated or adequately expended, is liable to lead to an explosion of some sort or another. In this general sense of the term dentition is no doubt a time of peril" (Goodhart).

Diarrhœa during dentition.

Here I would enter an earnest protest against the popular idea that diarrhœa during dentition is a natural and a good thing. So far as India is concerned it cannot be too clearly understood that diarrhœa is never a good thing, that under any circumstances there is always a very considerable element of danger in it, and that the convulsions which it is supposed to ward off during teething are a common mode of death from purging, without any dentition at all. Many an infant has been sacrificed to this prejudice by anxious mothers, who would willingly lay down their lives for their children's sake. The purging, it is argued, is not to be checked because the child is teething. The infant becomes weaker and weaker, more flabby and more pallid. At last a doctor is consulted, who, seeing through the case, endeavours to check the progress of the drain (an effort in which he may be thwarted if an ignorant nurse or parent has any voice in the matter), but possibly too late,—a convulsion may end life, and according to the popular theory, the purging having been checked or attempted to be checked, "it went to the head." What "it" represents is as difficult to conceive as to explain.

The seriousness of permitting it.

General

The dribbling and crossness of the child, the swollen

state of its gums, and its desire to bite at things— when these signs exist, which is by no means always the case—show that the coming of the teeth is felt by it. When such is the case, we should naturally be particularly careful as to simplicity of food, avoidance of exposure to chills or sun, and of over-heated verandahs. We should keep the bowels regular, seek the open air, not permit diarrhœa or constipation, be careful to have the clothing adapted to the season, and be very particular that sleep, which the warm bath will facilitate, be obtained in abundance; and, if necessary, the gums may be lanced, especially if there be muscular irritability and irregularity of action, when a few doses of bromide of potassium (9) should also be given, and any feverishness met by seclusion, absence of excitement, a gentle aperient, and a fever mixture (38).

management during teething.

As to lancing the gums, there is a singular prejudice against it on the part of some. I am convinced it is essential and very useful when there is feverishness and a swollen state of the gum, but that otherwise it is unnecessary. It is, however, as nearly painless as can be, and no harm can result from it, unless there be ignorant and cruel hacking, which will increase the irritation fourfold. It is a mistake to imagine that a gum which has been once lanced, and which has closed over a tooth, is more resisting than formerly. On the contrary, although the gum may appear to have healed, the probabilities are it never has actually united, but only approximately closed; at all events, it is less capable of causing obstruction.

Propriety of lancing the gums.

Lancing does not harden the gum.

*Diet after the appearance of the first teeth.*— Although a definite period is mentioned as that at

CHAP. VII.

Addition to diet to be guided by the teeth.

which the first change of diet may with advantage be made, or rather when another form of alimentation may be cautiously given in addition to the mother's milk, it must be laid down as a law, that this alteration is to depend not so much upon the age, as upon the readiness of the system as indicated by the teeth. *Till the first pair of teeth have come fairly through, the mother's (or nurse's) milk alone is to constitute the sole food, when there is a sufficiency of it.* Even then an alteration is to be very gradually and watchfully made; and it is at first to consist simply of two meals a day, of cow's milk, to which the proper proportions of water, lime-water, and sugar (Chap. IX.) have been added.

First addition to the natural food.

Objects of addition of lime water.

The objects of the addition of the lime water are (*a*) to correct the natural acidity of cow's milk and to make it resemble that of the woman in this respect, and (*b*) to facilitate digestion by preventing very solid curdling. All milk which enters the stomach is converted into curd, but when lime water is added the heaviness of the curd is said to be lessened. When infants are over-fed or when they drink too quickly, they often reject a portion of milk, which being curdled, one might imagine was not agreeing, but the curdled condition is a natural one.

If necessary, a third similar meal may be given in the 24 hours. Even at this period the power of utilising any other substance than milk, as has been shown in a previous section (p. 67), has been but partially acquired; therefore it is well to wait till another month has elapsed before any farinaceous articles are added to the diet. Then the addition ought invariably to consist of an article selected from the intermediate class of foods (p. 67), for the reasons stated. Either Liebig's or Mellins' preparation will answer equally well.

The second addition.

CHAP. VII.

Let it be a standing rule that the first addition to the simple milk diet of infancy be one of this valuable class, which should always be adopted as the introductory medium to the true farinaceous foods. Of course, a mother may be compelled, long before this period, to supplement the ordinary food of nature, and for such a case instructions will be found under the heading "Artificial Feeding;" but just now we are considering the case of a healthy child with a healthy mother or nurse, who is fully capable of performing her part.

The "Intermediate" class to be used as introductory.

The mother may be compelled to supplement the diet much earlier.

After a short time, say a fortnight or so, there is no objection to employing ordinary farinaceous articles of food, such as Robb's biscuits, Hards' food, or baked flour. But whatever selection be made, the milk should be but *slightly* thickened with it.

Pure farinaceous foods.

Nurses are always desirous of making the food as thick as possible, with the object of rendering it more "satisfying." True, a thick food may apparently have such an effect, but it is really torpor and not satisfaction which is induced, while the practice jeopardises the healthy working of the bowels. It is difficult to persuade an untrained nurse that because good hearty feeding of the kind will fatten an elder child, it will not have the same effect upon the tender infant, but that it will be actually bad for it.

Too great "thickening" of the food injurious.

At the eighth month or so, after the second pair of cutting teeth have appeared, pure milk may be given, and the quantity of thickening material, another fortnight later, may be slightly increased; and thus till the ninth or tenth month, when weaning is to be commenced.

Food at eighth month.

About the time of weaning, a little *weak* broth may be given once a day, but at an earlier period it would be very apt to cause acidity and flatulence. The

At weaning time.

CHAP. VII.

When meat may be given.

broth may, with great propriety, be added to the milk. On no account should meat pass a child's lips before it has reached 1½ year of age, and it is very seldom desirable before the age of 2. Certainly two years of age is sufficiently early to commence meat in ordinary circumstances. The Indian dish, "pish-pash," is in every way suitable.

Avoid periods of distress for changes.

Should there be much annoyance from the teeth at any time, such periods should be avoided for changing or adding to the diet.

Practices which pervert the taste.

It is a common practice to give children at about this age a bone to suck, and other similar dainties. The practice is a bad one; firstly, because the limit is not likely to be made at the mere bone—a little flesh is sure to be allowed to adhere—and this leads to other dangerous departures from good management; and secondly, because the taste is perverted, the simple milk is rejected, and stronger meat petulantly demanded. The practice of giving a young child a taste of everything it may fancy is, says Churchill, "a monstrous invasion of nature, which will inevitably entail its own punishment in delicacy, ill-health, and suffering."

Promiscuous feeding highly objectionable.

For further information on these topics the reader is referred to Chapter IX.

Growth as to weight and height.

It may be of interest here to say something about the growth of a healthy child. When born the average weight is seven pounds, and the length 19 or 19½ inches. At five months the weight is doubled, and at a year it is trebled. Dr. Louis Starr gives the following table of heights for ages:—

| | | | |
|---|---|---|---|
| At Birth ..... ..... | 19½ inches | At 7 months ..... | 24½ inches |
| ,, 1 month ... ... | 20½ ,, | ,, 8 ,, ..... | 25 ,, |
| ,, 2 months ..... | 21 ,, | ,, 9 ,, ..... | 25½ ,, |
| ,, 3 ,, ..... | 22 ,, | ,, 10 ,, ..... | 26 ,, |
| ,, 4 ,, ..... | 23 ,, | ,, 11 ,, ..... | 26½ ,, |
| ,, 5 ,, ..... | 23½ ,, | ,, 12 ,, ..... | 27 ,, |
| ,, 6 ,, ..... | 24 ,, | | |

Dr. G. W. Stephenson has recorded (*Lancet*, 1888) the average heights and weights of the English-speaking races as follows:—

| Age. | Boys. | | Girls. | |
|---|---|---|---|---|
| | Height (inches). | Weight (pounds). | Height (inches). | Weight (pounds). |
| 5 years | 41·30 | 40·49 | 41·05 | 39·63 |
| 6 ,, | 43·88 | 44·79 | 42·99 | 42·84 |
| 7 ,, | 45·86 | 49·39 | 44·98 | 47·08 |
| 8 ,, | 47·41 | 54·41 | 47·09 | 52·12 |
| 9 ,, | 49·69 | 59·82 | 49·05 | 56·28 |
| 10 ,, | 51·76 | 66·40 | 51·19 | 62·17 |
| 11 ,, | 53·47 | 71·09 | 53·26 | 68·47 |
| 12 ,, | 55·05 | 76·81 | 55·77 | 77·35 |
| 13 ,, | 57·06 | 83·72 | 57·96 | 87·82 |
| 14 ,, | 59·60 | 93·46 | 59·87 | 97·56 |
| 15 ,, | 62·27 | 104·90 | 61·01 | 105·44 |
| 16 ,, | 64·66 | 120·00 | 61·67 | 112·36 |
| 17 ,, | 66·20 | 129·19 | 62·22 | 115·21 |
| 18 ,, | 66·81 | 134·97 | 62·19 | 116·43 |

See also pp. 63 and 88.

CHAP. VII.

Budin (Rev. Gén. des Sciences, No. 21) insists upon the value of constantly weighing infants as the best means of testing the condition of nutrition and the relative values of the different modes of feeding. There is always a little loss of weight for the first few days. This is natural, consequent upon the delay in the secretion of the milk. Contrasting the increase of weight in infants (1) suckled, (2) only partly suckled, and (3) artificially fed, during the first ten or twelve days of life, the average gain was approximately twice as great in the first class (432 grains) as in the third (218 grains), while with the mixed diet the rate was intermediate (278 grains). The quantity of milk should be so adjusted as to lead to such a steady increase as will double the weight in five months, and treble it in the first year. Failure in the mother's milk will be shown by arrest in the increment of weight, but it should be pointed out that loss of weight accompanied by vomiting may possibly be a mere indication that the quantity of milk is too large.

## CHAPTER VIII.

### WEANING, LACTATION, SUCKLING.

SECTION I.—WEANING. SECTION II.—TOO PROLONGED LACTATION. SECTION III.—THE RESULTS OF SUCKLING COMPARED WITH OTHER METHODS OF REARING.



SECTION I.—WEANING.—The factors determining the period when a child should be weaned, namely, the fitness of the nurse to continue her office, the general health of the child, and the development of its teeth, should be carefully weighed before a decision is arrived at. Obviously we should incline to delay the cessation of the natural food of the infant if its dentition be backward, for the teeth still continue to indicate faithfully the forwardness of development. Similarly, if a nurse be fairly good, we should not counsel a discontinuance of nature's food in the case of a sickly child, although it may be deemed judicious to supplement this with some other kind of nutriment.

Points to be considered.

Teeth still a guide.

Weaning to be delayed if child sickly.

Broadly speaking, we may fix from the ninth to the twelfth month as the period for weaning with safety; never before the one, if it can be avoided, nor after the other. The milk of the strongest woman becomes poor after 12 months' nursing; and her health, if the attempt be further prolonged, is pretty sure to be

Time of weaning.

CHAP. VIII.

injured. Many native women make excellent nurses for a full year, but it is seldom so with the European mother in India.

Periods of nervous irritation to be avoided.

We should, as before said, avoid weaning at a time when there is much teething irritation, selecting rather a period of quiescence of the nervous and digestive systems. Menstruation would be a justifiable reason for hastening weaning; but not for abandoning nursing too hastily, before the age and development of the child justify such a course (p. 47). The process of weaning should be a gradual one. The mother should at first abstain from nursing at night, and after a time she need only suckle her infant twice a day, morning and evening. The demand for the milk being thus lessened, the supply will decrease steadily in proportion. Should the child, with persistent perversity, decline to accept other food than that of the breast, it must be permitted to suffer hunger, a weapon which, if judiciously employed, will eventually conquer. As to feeding after weaning, the subject will be treated under "Artificial Feeding."

Menstruation a reason for hastening weaning.

Mode of weaning.

Too prolonged lactation.

SECTION II.—TOO PROLONGED LACTATION.—Although nursing is a natural function under which the health usually improves, if continued too long, the constitution will suffer. Nervous symptoms will supervene, the appetite become impaired, and the digestive organs fail. Mental depression, headache, and loss of flesh are the more marked signs, while singing in the ears, faintings or faintness, palpitation and pains in the breast, are each of them warnings which should not be neglected.

Effects of.

Warning symptoms.

Effects upon the child.

There are also effects upon the child with which it is important to be acquainted. Children subjected to

this mismanagement for any length of time become pale flabby beings, whose stamina cannot be easily re-established by subsequent good management; their stomachs enlarge; their appearance is pinched, they continually whine, and occasionally scream shrilly. It is asserted by high authority that such children are unusually liable to rickets and consumption.

Comparative results of natural and artificial rearing.

SECTION III.—THE RESULTS OF SUCKLING COMPARED WITH THOSE OF OTHER METHODS OF REARING.—"The infant," says Dr. West, "whose mother refuses to perform towards it a mother's part, or who, by accident, disease, or death, is deprived of the food that nature designed for it, too often languishes and dies. Such children you may see with no fat to give plumpness to their limbs—no red particles in their blood to impart a healthy hue to their skin—their face wearing in infancy the lineaments of age—their voice a constant wail—their whole aspect an embodiment of woe. But give to such children the food nature destined for them, and if the remedy do not come too late to save them, the mournful cry will cease, the face will assume a look of content, by degrees the features of infancy will disclose themselves, the limbs will grow round, the skin pure red and white; and when at length we hear the merry laugh of babyhood, it seems almost as if the little sufferer of some weeks before must have been a changeling, and this the real child brought back from fairyland." But there are not wanting many who, because they have known a single or a few instances where children have been successfully reared by hand, will not hesitate to urge a similar course upon their acquaintances. Let us, therefore, turn from a general statement to hard facts. Dr.

Frequent result of deprivation of mother's milk.

Ignorant advice based upon isolated instances

Effects upon development.

CHAP. VIII.

Routh has compiled the following table, which speaks for itself:—

| Method of feeding. | Result in each 100 cases. |
|---|---|
| 1. Breast milk alone till ninth month or longer ... ... ... ... | 63 well developed<br>23 medium ,,<br>14 badly ,, |
| 2. Breast milk somewhat scanty, necessitating other food during later months to supplement breast milk ... ... ... | 57½ well developed<br>25½ medium ,,<br>16 badly ,, |
| 3. Small supply of breast milk only, necessitating additional food from birth ... ... ... | 27 well developed<br>26 medium ,,<br>46 badly ,, |
| 4. Fed entirely by hand from birth—no breast milk at all ... ... | 10 well developed<br>26 medium ,,<br>64 badly ,, |

(See also "Growth," p. 83.)

Compare the fourth with the first series, and it will be seen that the numbers have become pretty nearly inverted; that is, out of each 100 hand-fed children, 10 only have shown good development (and how many never live to undergo the test?), against 63 naturally nursed children!

In Glasgow.

Dr. Russell has shown that in Glasgow 69 per cent. of the unsuckled infants die, but of the suckled only 45 per cent. In other words, natural nursing saves twenty-four (practically a quarter) out of every hundred lives.

Gradual constitutional decline of the artificially fed.

The process by which children brought up by hand, and who are improperly fed, decline into the grave, is usually gradual. If so fed from birth, the child "seldom lives longer than two or three months. If he has been

suckled for some months before the commencement of the improper food, he has greater power of resistance; and although under the new diet he will soon become dull, and pale, and flabby, yet the effect upon his flesh and strength are less noticeable, and he usually drifts into rickets before any appearances have been thought sufficiently serious to require medical interference." (Eustace Smith.)

Rickets is a rare disease in a tropical climate. The affection is not considered separately in this book for that reason, and because, progressing very slowly, there is ample time to obtain advice. It need only be mentioned that it is due to mal-nutrition and the deprivation of fresh air and light. It is most frequently met with at about 18 months or 2 years of age, and is characterised by restlessness at night, sweating of the head and neck, diarrhœa, delayed dentition, great pain when the child is lifted, and flabbiness of the muscles, while at the same time there is an unhealthy pale plumpness; afterwards softening of the bones and certain deformities of the head and limbs take place. Obedience to the laws of hygiene and dietary already inculcated will prevent its occurrence, while too prolonged lactation or an exclusive use of condensed milk or infant foods will produce it.

Mortality in London of the artificially fed.

It is needless to trouble the reader further with figures, but it may be stated that the mortality of hand-fed children is vastly in excess of that of those who are nursed at the breast. Dr. Merriman, after much careful investigation, goes so far as to state that the attempt at hand-feeding in London "proves fatal to seven out of eight of these miserable sufferers." The records of Foundling Hospitals bear similar testimony.

Only urgent necessity justifies artificial feeding.

Nothing, therefore, but the most urgent necessity justifies a mother in bringing up her child by hand. Even partial hand-feeding should not be lightly undertaken, though it is admitted that this course is quite justifiable if the mother is unable to supply all the

CHAP. VIII.

nourishment needed. Being partially able to nurse without detriment to her own health, it is her manifest duty to do so, and to supplement her own nourishment thoughtfully and carefully. Statistics show that such partial nursing very considerably decreases the risk to the child.

Statistics, however, only show the results of all kinds of artificial feeding, both good and bad.

It is but right to mention here that the figures in the foregoing table and the other statistics regarding artificial feeding are open to the very just objection that they include those who have been fed artificially upon bad as well as upon sound principles, or upon no principle at all; and that any argument deduced from them cannot apply to cases where proper food is given, combined with good general management; still the numbers show what the public actually do accomplish in attempts which are doubtless mainly actuated by the best motives.

## CHAPTER IX.

### ARTIFICIAL FEEDING.

THE METHOD OF ARTIFICIAL FEEDING, AND SOME HINTS REGARDING THE DIET OF CHILDHOOD.



Mother's duty to nurse to extent of her ability.

WHEN a mother is unable to suckle her child, and it is not the intention to employ a wet-nurse, the child must be brought up by hand. The deficiency of the mother, however, seldom amounts to absolute inability, and it is her duty to nurse her infant to the full extent of her capacity, however partially she may be able to fulfil the task. In almost the worst cases she will be able to suckle twice a day, for a few weeks at all events, and for the rest, artificial feeding must be relied upon. Alternate suckling and artificial feeding are better than weaning.

Difficulties of hand-feeding.

But hand-feeding is a process which demands so much attention on the part of the nurse, and so much judgment in adapting the nature of the food to the powers and requirements of the infant, that the general result is eminently unsatisfactory, and it is therefore a course which should be entered upon with reluctance.

Satisfactory artificial feeding quite possible.

On the other hand, it is quite certain that infants may be satisfactorily reared artificially, provided all the teachings of experience and science be adhered to.

An infant, then, is to be brought up by hand:—Let it be again and again impressed upon the parents that milk, and nothing but milk, under these or any other

CHAP. IX.

Milk the only true food at first.

circumstances, is the only article in the world which is a true food from the moment of birth till the first teeth have appeared. On a previous page (57) it has been shown that by proper dilution and the addition of sugar of milk, cow's milk may be made to resemble pretty closely that of the woman, especially if some cream (which is always easily digested by infants) be added. But mere dilution will not suffice to effect the necessary similarity, because cow's milk curdles into a firm, heavy clot when it enters the stomach, while woman's milk behaves quite differently, falling down in separate loose particles. There are two simple means by which it is sought to obviate this objection to cow's milk. The first is by the addition of lime water (p. 80), which, however, is so weak (containing only $\frac{1}{2}$ grain of lime to each ounce) that a large quantity of this solution is required, unless the saccharated solution of lime (*see* receipt No. 2) be substituted. The second means is by the addition of a small quantity of barley water (*see* receipt No. 3) or gelatine—not, be it remembered, with the object of increasing the nutritive properties of the food, but of preventing the disposition to too firm clotting by purely mechanical means, the thickening substance so separating the particles of curd that they do not come together into so heavy a lump. It is as well to know that no other farinaceous article than barley will well meet the requirement, because it alone contains very little starch, and that little is in a state of extremely fine division. Gelatine (*see* receipt No. 4) may be used for the same purpose with equal advantage. A teaspoonful of the solution is then to be added to half a bottleful of the milk and water.

Dilution alone not sufficient.

To prepare cow's milk to prevent curdling. (1) By lime water.

(2) By barley water or gelatine.

Of these plans, dilution with barley water is to be preferred. The addition of a little well diluted Mellins' food will effect the same object. But the addition of some lime water is also desirable in order to overcome the natural acidity of cow's milk, and for this purpose two teaspoonfuls added to a pint of milk suffices. On the whole it is better to restrict the use of lime water to this object unless circumstances require otherwise.

Quantity of lime water required.

For the newly-born infant two tablespoonfuls of milk may be diluted with three of warm filtered water, and to this should be added a teaspoonful of lime water, or it may be treated with barley water instead, or with gelatine as above described; a sufficiency of sugar of milk (a small level teaspoonful to each bottle), or white sugar to slightly sweeten the food, completes the preparation. Brown sugar should not be used, because it is apt to set up fermentation and cause acidity.

Food for the newly-born infant.

Brown sugar to be avoided.

The following is recommended by an American authority, Dr. Keating :—One ounce of milk, three of water, one of cream, and a teaspoonful of sugar of milk, to which a little lime water may be added. The cream represents the difficulty here, but in cold weather or in the Hills it may be procured with a little trouble.

Should the parent be on board ship, or otherwise so situated that ordinary milk cannot be obtained, condensed milk may be used at this period, *for a short time*, with great safety.* "Infants immediately after birth almost invariably do well upon it."

Condensed milk.

* One teaspoonful to six tablespoonfuls of warm water is the proper strength for this age. The food should never be re-heated, but made fresh each time.

CHAP. IX.

Condensed milk "is usually well digested, but the nourishment it supplies is very insufficient for a growing baby. The child may get fat, but is usually lethargic and dull; although big, he is not strong; and unless the milk be largely supplemented by Mellin's food, the infant will probably drift into rickets before he is seven or eight months old. The same may be said of other foods containing preserved milk, as Nestle's and Oettli's Swiss milk food. . . . In all cases it is desirable to revert to fresh cow's milk as soon as this can be done with safety" (Eustace Smith). Besides this, hand-fed infants are liable to a form of scurvy, which is prevented by the use of fresh milk. Goodhart is sure that to confine a child to condensed milk for many months is to run a definite risk of an attack of scurvy. The addition of cream, however, lengthens the period during which it may be safely trusted.

For the first two months, an interval of about two hours should elapse between each meal (pp. 44 and 64), the food being administered from the feeding-bottle (p. 52), which should be kept scrupulously clean. As to the quantity required for each meal, consult p. 64.

Religiously avoid farinaceous foods.

The deplorable ignorance of dealing prematurely with farinaceous foods has been discussed at page 65, and the parent who attempts to rear her child by hand will do well to ponder the remarks there made. The temptation to resort to other foods than milk are, in hand-feeding, so great, that the practice is too frequently adopted.

If condensed milk used, early addition of Liebig's food necessary.

Should it happen that the use of condensed milk is compulsory, it is desirable to add to it, after about six weeks, Liebig's food for infants; or, better still, because it is more palatable, Mellin's or Savory and Moore's preparation of the same article.

Intermediate foods.

This leads us to a consideration of a class of foods not before discussed—that class which is represented by Liebig's food, and which is prepared by the aid of malt.

Such foods are in the strict sense of the term "farinaceous," but viewed from a physiological standpoint they are not quite so. The fact is, that their farinaceous base has been so chemically treated that part of the work of digestion has been performed before the food reaches the stomach,—the work of the salivary and other glands which are in abeyance in infancy (p. 67) has been accomplished artificially, and the starch has been largely disposed of. Thus we are introduced to a valuable intermediate class of food, and one which may advantageously be used as the first addition to the diet *at the proper time*. None of this class is a perfect food for the infant—that is, the addition of milk is invariably essential, and can never be dispensed with; nor should any of them be resorted to without some substantial reason. The greater dangers of the farinaceous class are, however, largely removed, and amongst this class are included innumerable so-called "infant foods."

Great value of.

The first few days of life having passed, the artificially-fed infant's diet should consist of equal parts of milk and water, to which has been added two teaspoonfuls of lime water and a level teaspoonful of sugar of milk.* Three to four ounces of the food only need be prepared each time; or Keating's mixture (p. 93) will suit admirably if cream be procurable.

Food after first few days of life.

* "Compressed milk tablets" (prepared by Burroughs and Wellcome), obtainable from the chemist, contain all the necessary sugar and salts. For a child a month old, three tablets are dissolved in a mixture consisting of two ounces of fresh milk, the same quantity of water, and one ounce of cream. For a child of two or three months four tablets are used. Should the stools contain curd the milk should be more diluted.

CHAP. IX.

From six weeks to three months.

From six weeks to three months, only one-third of water or barley water need be used; and from three to five months, this quantity may be reduced to one-fourth.

Food to be prepared freshly for each meal.

The milk-food should be given as soon as possible after having been prepared, especially during the hot weather, lest fermentation commence (p. 61); and for the same reason a greater quantity than is required for present use should not be made at any one time. The slightest sign of sourness calls for rejection. The food should be warmed by placing the bottle in hot water before each meal.

Times of feeding.

After two months of age, every third hour will suffice for the nourishment of the healthy child, except at night, when it should be taught to sleep undisturbed from eleven p.m. till five or six a.m. (p. 64).

May add Liebig's food.

When the milk seems not to agree altogether with the child, that is, if the infant does not thrive well, it is proper to add a small proportion of Liebig's or Mellin's food to the diet, avoiding the serious error of too great thickening (p. 81).

Only justifiable additions to the milk.

The only justifiable additions to the milk of an infant under six months of age, or before the period of dentition, in addition to the necessary one, water, are—(*a*) a small proportion of one of the malted foods; (*b*) lime water; (*c*) gelatine; (*d*) barley water, and (*e*) cream—any of which is *only* to be used in the manner described.

It has been said that barley water is to be preferred to lime water. The reason is that the former does not alter the gastric juice or impair the digestion. Lime water sometimes causes or perpetuates a diarrhœa when too freely used.

Evils of too frequent feeding.

If a child be fed too constantly, the stomach will become overloaded, and the result will be the same as if it had been fed upon improper articles, viz., irritation, from which will arise many difficulties and anxieties, if not dangers. Vomiting, diarrhœa, and restlessness will supervene, and the constant crying is apt to be mistaken for hunger. Then, while the little sufferer is labouring to dispose of his last meal, another supply is forced upon him and his troubles are increased till perhaps gastritis is established.

If milk disagrees.

Do what we may in the above ways, which are usually successful, the milk will sometimes not agree with the child, who may suffer from vomiting, flatulence, and diarrhœa. It is then well, having first inquired as to the times of feeding, the size of each meal, and the cleanliness of the apparatus, to try some other plan:—By re-milking the cow, after the daily supply has been abstracted, we obtain the "strippings," which is very rich in cream and poor in curd. By mixing this with an equal quantity of barley water we obtain a food which often proves successful, a teaspoonful of caraway water (10) being added if there is flatulence. Condensed milk, with the addition of Mellin's food, is another change which sometimes effects the desired end. Should the motions become persistently relaxed, it is a common and a useful practice to boil the milk. After boiling it is well to skim the milk; and the process of boiling, cooling, and skimming may be repeated several times with increasing advantage. Biedert's cream mixture is an excellent food, particularly suitable to many cases which require the withdrawal of the curd of milk. It consists of cream,

Try "strippings," barley water, or condensed milk.

Should diarrhœa occur.

Biedert's cream mixture.

CHAP. IX.

water and sugar of milk, to which milk is added eventually.

For infants a few weeks old, no milk is added; the child is fed upon a mixture of four ounces of cream, twelve of warm water, and half an ounce of milk sugar. As the infant grows, two ounces of milk, and then four ounces or more are added, and in full strength it contains equal parts of added milk (Ashby and Wright's "Diseases of Children.")

If acidity.

A sour smell from the child's mouth, and from the rejected food, is a sure indication that fermentation is proceeding, and steps should be immediately taken to remedy a condition which may become serious. In such a case it is well at first to try the omission of sugar from the food, to increase the quantity of water, and to add a small pinch of salt. Goat's or ass's milk may be tried, either boiled or raw, adding a little aromatic water and a pinch of soda, or older children may, for a day or two, be put upon equal parts of veal broth and barley water. Should these simple means not succeed, it may become necessary to omit milk altogether from the diet for two or three days, substituting Mellin's food and whey, the milk being cautiously and gradually re-introduced when the symptoms have subsided, or Cheadle's Bread Jelly (see *Receipts*) in more serious cases.

May be necessary to omit milk altogether.

Peptonised milk.

But we may not have to deprive the child of its milk. If simple means fail we still may obtain all the assistance we want from peptonised milk, which has been added by Sir W. Roberts to our means of encountering cases which obstinately refuse to digest cow's milk. The curd, which is the real difficulty, is, in this way, disposed of. Various methods of accomplishing

this change will be found under the heading "Receipts" (No. 9). But neither this nor any other artificially digested food is to be habitually employed simply because digestion is facilitated. Their constant and unnecessary employment tends to weaken digestion and unfit it for the vigorous performance of its proper functions. At the same time the value of Sir W. Roberts' discovery cannot be over-rated.

Five months of age.

Should it not have been found necessary to give Liebig's or one of the other malted foods at the age of two or three months, it is well to introduce the child to it at about four or five months of age, that is, about two months previously to the use of flours not so prepared.

When malted foods may be given.

Six months of age.

At about six or seven months, or the time of the eruption of the first teeth, ordinary farinaceous articles may be commenced; and concerning this class of foods there is this important point to be known,—that it is by no means immaterial which particular one of the group be selected. In milk the albuminous elements are to the others as 1 to 4. Obviously we should endeavour to choose a food which most nearly approaches milk in composition, with the object of avoiding too sudden a change, or one which will tax all the powers of digestion. In wheat the proportions are as 1 to 5, in potatoes 1 to 9, in rice 1 to 10, and in arrowroot, tapioca, and sago only 1 to 20. The natural conclusion, therefore, is that wheat is the article most suitable for the purpose.

When farinaceous foods may be commenced.

The kind used is important.

Almost any of the various kinds of flours which are sold in the market will answer very well. Those who fancy a name and a high price will find they possess a

CHAP. IX.

Chapman's wheat flour.

good flour in many of the "foods for infants" which they may purchase. There is, however, one kind which deserves special mention, viz., "Chapman's Entire Wheat Flour," because it has the advantage of containing the inner husk of the wheat, which retains some very valuable nutritive qualities (particularly phosphates). Whatever species of farinaceous food be used, only two light meals of it a day are at first capable of digestion, in addition to three others of milk. Sometimes the first use of farinaceous food is followed by constipation, a symptom which may be relieved by the substitution of a teaspoonful of fine oatmeal for the flour in the morning meal. In any case, it would seem advisable to change the monotony of the diet from time to time, substituting, for instance, Mellin's or Savory and Moore's food for Chapman's wheat flour for a few days occasionally, and making similar simple variations.

Change of diet desirable.

Saccharated solution of lime saves space to travellers.

It is still desirable to continue the addition of lime to the milk; but for travellers, or persons living in camp, the space occupied by lime water is an inconvenience which may be overcome by carrying instead a couple of ounces of the saccharated solution of lime (*see* receipt No. 2; but it is better obtained from the chemist), of which fifteen or twenty drops will be sufficient to add to each meal.

Eight months of age.

At eight months, dilution of the milk need not be continued. The two farinaceous meals, as described, should still be given.

Nine months of age.

At about nine months, a little *thin* chicken or mutton broth, or veal tea, carefully freed from all grease, may be given in lieu of one of the meals of

milk; or the broth may, with great propriety, be mixed with the milk.

Ten months of age.

At ten months, the quantity of farinaceous food may be increased, and, if necessary, the yolk of one egg may be beaten up with the afternoon milk meal. On no account should any article be allowed to supplant milk as the staple of diet. At this age the child will consume about two pints of milk in the twenty-four hours. The child is now quite sufficiently old to be capable of appreciating a variety in its food, and it will thrive all the better for it. To meet this end, instead of the egg and milk meal, broth or beef tea (receipt No. 5), and a rusk, may be allowed every alternate day; or half a teaspoonful of cocoatina (not cocoa, which is too rich) may be added to the morning meal instead of the farinaceous meal. To avoid the evil of having to give food between meals, care should be taken that a sufficiency of food be offered each time to satisfy all reasonable demands.

Milk still necessary.

Variety essential.

One year of age.

*After twelve months of age,* light puddings, well-mashed potatoes with gravy, or the lightly-boiled yolk of one egg may be allowed; and with meals which were before purely of milk, a rusk or a slice of stale bread soaked in milk, may be given. The fifth, or night meal, may now be discontinued. A child should always have a drink of milk if it wakes in the morning long before its breakfast hour, or if it is sent out of doors before breakfasting, as is usually necessary in the hot weather. Milk still is to be the staple food.

Eighteen months of age. Meat first allowed.

At eighteen months of age, a very little meat may be allowed,—a small piece of roast mutton, without fat or grease, finely minced or pounded, is as suitable as

69982

CHAP. IX.

any; or the Indian dish, "pish-pash," will prove a suitable food. A slice of good bread and butter, alternated with porridge, is also admissible; but milk is to be the chief nutriment.

Two years of age.

As two years of age are approached, the quantity of meat allowed (about a tablespoonful of mince) may be gradually increased, but it should not be given more than once a day. As soon as it can be conveniently effected, the number of meals may be reduced to three, in addition to the cup of milk and slice of bread taken before early morning exercise.

Three to four years of age.

Between two and three years the same foods may be continued, and a little stewed fruit occasionally added.

Vegetables.

As to vegetables, the potato is sufficient for all purposes till the age of three is approached, when vegetable marrow, asparagus, or young carrots may be introduced; but greens should be avoided till about four years of age.

Transition to be effected cautiously.

It will be seen that the various transitions have to be effected gradually and with great caution—a remark which applies more especially to the introduction of flesh food—and that milk must always constitute the staple of the diet.

Mastication.

The habit of thorough mastication should be sedulously inculcated, and eating between meals as carefully avoided.

Rest after meals.

Rest after a meal, for a short time, is always desirable, as all the nervous force is required for digestion.

[redacted]lt.

Salt is an article which should be added in moderation to all meals; but children should not be allowed to devour it at an immoderate rate, as many will, if permitted.

Sugar is perfectly harmless if allowed in moderation, but in excess it causes acidity and fermentation, and perverts the appetite. A moderate amount of ripe and digestible fruit may always with safety be given to a child over three years of age; but nuts, dried and preserved fruits (except when stewed), should never be allowed. Very weak tea, largely diluted with milk, cannot do any harm after about two and a half or three years of age. Alcoholic liquors, in any form, should never be permitted to approach a child's lips, unless illness demand it imperatively.* Most children dislike fat, and it should not be forced upon them. It is very apt to disagree. The sugar, of which they are naturally so fond, compensates to some extent for the smallness of the quantity of fat they eat.

Sugar.

Fruits.

Tea.

Alcohol.

Fat.

* For many of the details given in the foregoing summary, the writer is indebted to Dr. Eustace Smith's "Wasting Diseases of Children," Keating's Cyclopædia, and Dr. Cheadle's work upon infant feeding.

## CHAPTER X.

### ON VACCINATION.

CHAP. X.

Dreadful ravages of small-pox prior to inoculation.

CENTURIES ago small-pox had become a "naturalised plague" in England. In 1796 (the year of the introduction of vaccination) the deaths by small-pox exceeded 18 per cent. of the total deaths; about 1 to 4 of those attacked died, and more than half the blind people owed their privation to small-pox.

The introduction of inoculation.

Inoculation has been practised by the Hindoos from a remote period. About 1717, Lady Wortley Montague, the wife of the British ambassador at Constantinople, had her son inoculated, and through her instrumentality the operation was introduced into England. "Then followed, under the sanction of the Royal Society, six condemned criminals; next five pauper children of St. James's; then the children of a few families of distinction; and to crown all, their Majesties, acting on the cautious advice of Sir Hans Sloane, had all the royal children submitted to the operation" (Guy). A greatly lessened mortality followed the introduction of inoculation, but it originated many epidemics, and was a source of great danger to others who approached the patients, the most virulent form of small-pox being capable of being imbibed from the mild inoculated form.

Results of inoculation.

Jenner discovers vaccination.

On May 17th, 1749, the immortal Jenner was born, and it was he who in 1796 discovered vaccination,

which is an operation whereby "the matter which forms on the udder and teats of the milch cow is introduced into the human body; only local effects ensue, with slight feverishness; the trifling affection is not infectious; it prevents the occurrence of small-pox in the great majority of cases, and when it does not prevent an attack it mitigates its severity as certainly as does a previous attack of small-pox" (Guy). Vaccine matter is really only small-pox matter, after having passed through the body of the cow.

What is vaccination?

Writing of England, Dr. Guy says, "A fall from 3,141 per million per annum to 2,286 represents, therefore, the reduction of mortality from the reign of small-pox uncontrolled, to the rule of small-pox modified by inoculation; and from 2,286 to 272, the superiority of vaccination with State patronage and aid, to inoculation without it." For the ten years ending 1770, small-pox caused 108 deaths of 1,000 deaths from all causes, and for ten years ending 1860 it caused 11 per 1,000. In Berlin, before vaccination was introduced, 3,422 per million of the population died of small-pox; since vaccination 176 so die. Recent facts at Leicester, says the *Lancet* (January, 1894), "are appalling in their simplicity." Of 281 cases of small-pox 126 were unvaccinated; of these 126 no less than 83 were under ten years of age, and in 9 of these the disease was fatal, whereas there was no instance of small-pox occurring in a vaccinated child under ten years of age, and of the cases occurring in vaccinated persons there were no deaths.

Results of vaccination.

Inoculation was a great blessing, but in the presence of vaccination it is a great evil.

Is inoculation permissible?

CHAP. X.

Small-pox after vaccination rare, and then very mild.

The powers of vaccination, like those of a previous attack of small-pox, are not absolutely unlimited. A second attack after the lapse of years is possible, though improbable; and when it does come, it is "modified," or comparatively trivial, seldom bringing danger. Even after small-pox has attacked an individual, it is a fact that vaccination still possesses a life-saving power if promptly resorted to. If such a person be vaccinated on the second day of the small-pox, it will prevent the development of the disease; if on the fourth day, the small-pox will be modified; if on the fifth day, it will be useless, because the vaccination will not have had time to arrive at that period of maturity which conveys immunity before the small-pox is developed—the latter gains the race, in fact.

Vaccination of persons attacked with small-pox.

Imperfect vaccination.

Vaccination, however, like everything else, requires to be done well to be efficient. An operation may be performed which conveys no immunity from small-pox, and a parent may rest in a false hope that his child is safe. Again, an operation may convey only partial protection. It therefore becomes us to enquire into the proper mode of operating and the means by which we can judge of success or failure.

Operation.

*Mode of Operating.*—In an out-of-the-way place a medical man may not be available at the time wanted. The first thing to do is to induce the mother of some healthy child, whose arm is in a fit state (see below), to consent to the abstraction of a minute quantity of vaccine matter. Against allowing this, some have an objection, under the impression that it lessens the potency of the protection, that it causes inflammation to the giver, &c.; but such notions are fallacies. In no degree whatever do

If possible vaccinate from the arm.

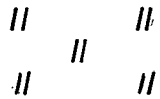
Ignorant prejudices.

such effects result. The vaccination has, by that time, affected the whole constitution, and the local interference (which is really nominal) is quite incapable of influencing the change which has been already accomplished throughout the body.

Bovine lymph.

Those who prefer it may now, in several parts of India, obtain lymph from the calf direct; but, says Dr. Seaton, "If the bovine lymph be preferred for general use, it will still be well to choose humanised lymph in the case of delicate children, because of the severity of the local effects when bovine lymph is used."

The arm to be operated on having been exposed, and the child seated on its mother's lap in a good light, a couple of pricks, just sufficient to puncture its covering, are to be made in the vesicle. Immediately two drops of limpid fluid will exude. These are now to be touched with the side of the point of the lancet (which has been previously warmed in hot water and wiped dry) with which, thus charged, five duplicate scratches are to be made, thus



on the skin, which should, at the time, be steadied by the arm being gently grasped from behind with the left hand. The scratches should be very superficial, barely sufficient to show blood. Or a better plan is to insert the point of the charged lancet obliquely under the outer skin. By this means the matter is received within a valvular flap, and is not so easily rubbed away.

Vaccine tubes.

If it be impossible to procure a child from whose arm to obtain the matter, application should be made to the civil surgeon of the district, who will send by post a few hermetically sealed tubes containing lymph. When

CHAP. X.

required, the ends are to be broken off with the nails and the contents blown out upon the lancet point. But it should be recollected that the best results are obtained by arm-to-arm vaccination.

Age for vaccination.

A child should be vaccinated within the first two months of its life, if it be in good health—delay represents unjustifiable risk. The weather in India presents a difficulty at times, but not nearly so great as is imagined; the operation may be done at all seasons. If small-pox prevails in the neighbourhood, no age is too early and no state of health, except of a very serious or acute character, nor of weather, should prevent vaccination.

Number of places which take, important.

The number of punctures made is a matter of great importance. Let all mothers bear in mind these two facts:—First, that in proportion to the number of vesicles which appear in response to the operation, is the general feverishness and disturbance less; and secondly, that in the same proportion is the amount of protection gained. The Medical Officer to the Privy Council reported as follows:—

Statistics to prove the point.

| Cases of Small-pox. | Deaths in every 100 cases which occurred. |
|---|---|
| Unvaccinated ... ... ... ... ... | 35 |
| Said to have been vaccinated—no marks ... | 23·57 |
| Having one mark ... ... ... ... | 7·73 |
| ,, two ,, ... ... ... ... ... | 4·70 |
| ,, three ,, ... ... ... ... ... | 1·95 |
| ,, four ,, ... ... ... ... ... | 0·55 |

How are we to know that the vaccination has "taken"; that is, that it is successful?—By the character of the vesicle. On the second day there will be seen a slightly red elevation over each puncture, which is so marked on the third day as to enable us to say that the case is a successful one. On the fifth day there will be a raised round bleb, with a depressed centre; on the eighth day it is much larger, of a whitish pearl-colour, and distended with lymph,—around the whole, an inflamed blush. Lymph used for transmission to others should be clear like water; if cloudy or mixed with blood, it should be rejected. The hotter the weather the earlier it ought to be taken. In India usually about the sixth day is the best time. After the eighth day it is useless. After this latter period the vesicle scabs and becomes brown and hard; and about the twentieth day the scab falls off, leaving behind the vaccine "mark," which remains more or less permanent throughout life.

Has the vaccination "taken"?

Course of the vesicle.

Time for the abstraction of lymph.

# CHAPTER XI.

## GENERAL HYGIENE.

### CLOTHING, EXERCISE, SLEEP, VENTILATION, LIGHT, AND BATHING.

CHAP. XI.

Peculiarities of the seasons which have to be considered.

SECTION I.—*Clothing.*—What are the general principles upon which a child should be clothed in India? In temperate climates we merely have to consider how best to keep the body warm; and for this reason we select as materials the worst conductors of heat, such as flannel and other woollen garments. During the greater portion of the year an opposite condition obtains in India,—we have to guard against heat; the skin is congested, it is irritable, it perspires freely, and evaporation is rapid. At another time of the year, particularly in the Upper Provinces, pure, dry, and piercing cold has to be encountered by the body, which has been but badly prepared by the previous heat to meet it. Again, there is the intermediate season of the rains, when the cooling of evaporation is absent, and vicissitudes are of constant occurrence. The first is characterised by the accession of heat, the second by its abstraction, and the third by the dangers which arise from chills. Manifestly, then, the clothing of the child is a matter of no small importance.

CHAP. XI.

Clothing is made of either flannel, cotton, or linen. Flannel is a very bad conductor, cotton less so, and linen still less so. Of course a bad conductor will not quickly take away the warmth of the body it enwraps, and therefore the heat is retained or kept in by the covering; but we have to admit, on the other hand, that a bad conductor will also refuse to conduct the external heat to the body, hence the wearing of a loose great coat to keep out the heat of the direct rays of the sun is no fallacy, and black, which absorbs rays, is hotter than white clothing, which reflects them.

The conducting powers of materials.

Flannel is somewhat heavy, it is more or less irritating, and it is such a bad conductor that, although it absorbs the excessive perspiration, it does not draw away the heat from the body with desirable rapidity. From this it will appear that flannel is not an altogether suitable article of clothing during the hot weather, except when the person is exposed to the direct rays of the sun. In the rains, when evaporation is almost suspended, most flannels are so thick that they do not readily enough yield up their moisture to the air; the body is then kept in a state of irritation and moisture, by which prickly heat and general discomfort are often produced. Notwithstanding these objections, most of the disadvantages can be overcome by the use of a single flannel garment without other clothing outside it. Indeed, then, it may be regarded as the best form of clothing for the child, as it protects better than any other from chills, and it is less liable to saturation; but it is essential that the garment be loose so as to allow free ventilation and evaporation. Of course much depends upon the selection of a suitable quality of the

Objections to flannel.

How overcome.

CHAP. XI.

fabric. Any kind if covered with layers of other clothes is unsuitable for the hot weather and rains.

Linen.

Linen is altogether objectionable, because it becomes so soon saturated, because it conducts too readily the external heat to the body, and in a current of air it parts with its moisture so rapidly as to cause shivering;

Cotton.

whereas cotton is light, it is absorbent, it draws away more heat from the body than does flannel, and it leads less to it than linen; but when saturated it clings to the body and may act as a tattee when evaporation is suspended in the rains and in damp regions.

Summary.

So far, therefore, as the dry hot weather is concerned, the advantages are with cotton. In any weather, all the disadvantages are with linen. During the rains or periods of vicissitudes light loose flannel without other covering is the safest. In the cold weather flannel should be worn under other suitable clothing, taking care that the child is not over-weighted and its exercise thereby impeded. Some of the gauze flannels are excellent in their properties; but under the action of soap and water even the best of them become thick and harsh, when they require renewal, and this is expensive.

Exceptional care as to clothing necessary in the rains.

During the rains or other times of vicissitudes it is impossible to be too guarded regarding the suitability of children's clothing. We know from experience how we ourselves then pass rapidly from a state of excessive heat to one of chill, and it is but reasonable to conclude that the child or infant will, in proportion to its greater nervous susceptibility, become severely affected. In fact, during infancy and childhood, nature is less able to resist the external influences of temperature than in

adult age; and no greater mistake can be made than the absurd notion that exposing the limbs of tender children to cold, from which we ourselves shrink, "hardens" them; on the contrary, it is a cruel and dangerous practice, often not expressing itself openly at the time (though it sometimes does so in severe diarrhœas, bronchitis, and other inflammations), but covertly laying the foundations of slowly-progressing wasting affections.

The fallacy of the theory of "hardening."

At night it is desirable to clothe children in flannel garments (jacket and trousers in one), because during sleep the temperature is lowered, and the punkah puller very frequently creates a vicissitude.

Flannel suitable for the night.

The foregoing principles hardly apply to young infants whose power of generating heat is so small that they can hardly be kept too warmly clad, nor do they suffer from the heat of the climate, a capacity which the older child possesses in a lesser degree, and apparently loses gradually year by year. The child has, on the other hand, much less ability to encounter and resist cold than the adult, a power which it by degrees acquires.

Ability of young infant to bear heat is great.

This alters as childhood advances.

The clothing of a child should not, in India, be too frequently changed, as is sometimes the fashion, even when damp with perspiration, for chill is thus very apt to be induced and the dampness soon returns.

Clothing should not be too frequently changed.

SECTION II.—*Exercise and Sleep.*—Exercise produces waste of tissue, that is, expenditure. Sleep is the time of rest, when expenditure is at its lowest point, and renovation proceeds without interference. The more exercise, the more sleep. But exercise not only causes expenditure, it also causes all the vital

General effects of exercise.

CHAP. XI.

functions, circulation, respiration, &c., to proceed with increased activity, which means that repair is at the same time more quickly conducted. On the other hand, without exercise the rejection of the old and reception of the new materials is not effected as rapidly as ought to be the case; the old remains longer than it should, making no room for the new; hence we have flabby muscles, a pale face, and impaired health.

The exercise of infants in arms.

The young infant requires exercise, as well as the growing boy or girl. In India a baby may usually be sent out of doors, carefully wrapped up, after it is a fortnight old. The nurse should not be allowed to sit down and gossip to her friends, as is the ayah's wont, when she takes the baby out to "eat the air," because the motion to which it is subjected by her action in walking represents to it proper and necessary exercise.

Evil effects of not exercising young infants.

Even when in the house, an infant should not be left lying too much on its back in bed, but should be carried about in the arms frequently, in slightly varying positions. Too prolonged lying flat upon the back proved to be one of the principal causes of mortality in the Foundling Hospital of Paris, by producing congestion and inflammation of the lungs, all the blood gravitating to the back of the chest. "Change of position and gentle movements are as necessary for the health of the internal organs as for muscular development" (Churchill). The clothing of an infant should always be sufficiently loose to permit of the free play of its limbs, its kicking about being exercise of an important nature.

Exercise for elder children.

A child should not be taught to walk; such exercise, before nature has fitted the bones to bear the weight,

will do harm, and may produce deformities; rather should he be permitted to discover his own way to the use of his legs. Boisterous play is essential to the health of children; by it the lungs are expanded and the muscles of the chest—all the muscles, in fact—are brought into full action. Riding is admirably adapted to Indian children; it creates a manly spirit, and makes a thorough and exciting change in the routine of the day.

Play essential.

Riding.

Children who are prevented making any noise in a house, who are restricted to a single room, and who are merely sent out for the dreary daily walk, do not get a sufficiency of exercise to maintain health. All children should be sent early to bed, so that they should be up and out betimes in the fresh morning air (before which they should have had a cup of milk and a slice of bread). A child should not be disturbed from its morning sleep in order to send it out. Send him to bed early, so that he will awake at the desired hour himself. When a child is sickly much harm may be done by sending him out too early. "Persons," says Scoresby Jackson, "who are not in robust health should not, as a rule, take exercise before breakfast; a mistaken zeal on this point frequently subjects children of delicate constitution to unnecessary cruelty." All children up to three and a half or four years of age should sleep one or two hours in the daytime; but not immediately after a meal, nor yet immediately before one. When possible, children should sleep in upper rooms which are thoroughly ventilated, but free from all draught.

The exercise should possess interest.

Sleep should not be disturbed.

Sometimes early morning exercise is hurtful.

SECTION III.—*Ventilation, Light, and Bathing.*—

CHAP. XI.

In the hot weather the European child is necessarily confined to the house during a great part of the day, but in the cold season it spends most of its time out of doors, and the houses are then more or less wholly thrown open. On the whole, the European child in India is extremely favourably situated as to fresh air—a circumstance which no doubt has a great deal to do with the low death-rate of those who are well cared for.

Favourably circumstanced in India as to ventilation.

Ventilation during first days of life.

The importance of ventilation during the first days of life has been already adverted to (page 41), but something more needs to be said on the general subject.

Atmospheric air.

The air consists of certain gases, chiefly oxygen and nitrogen, the former being its vital principle, the latter merely effecting a proper amount of dilution; keeping it at the right strength, in fact. When we breathe, the carbon from the lungs combines with the oxygen of the air, and forms carbonic acid—a gas which, in very minute proportions, about three volumes in 10,000, exists in all air for the support of vegetable life; but this carbonic acid gas, when doubled by respiration, becomes very injurious to health. But besides the formation of carbonic acid gas by respiration, we also spoil the air by breathing out a quantity of animal matter, which floats about imperceptibly.* Now, bad as it is to breathe an air loaded with carbonic acid gas, the animal matter is really very much more injurious and

Product of respiration.

Why air constantly breathed is so injurious.

* The amount of carbonic acid and of animal matter always bear an exact proportion the one to the other, therefore the amount of carbonic acid being detected by the chemist, the quantity of poisonous animal matter present is also known.

dangerous. A mouse if put under an inverted glass will soon die, because it rapidly exhausts all the oxygen from such a small space; but even if precautions be taken to supply it with a full proportion of oxygen by chemical means without permitting ventilation, death will just as certainly ensue, because it will be poisoned by the accumulating organic matter.

Two poisons present.

Two poisons, then, are produced: the first, or carbonic acid, is known popularly under the name of "choke-damp"; and the second is, in large quantities as we see, a deadly poison.

Physical effects of a vitiated air.

"The breathing of vitiated air for even a few hours produces," says Parkes, "increased temperature, quickened pulse, furred tongue, loss of appetite, and thirst, for even forty-eight hours afterwards. The continued respiration of the same quantity of air renders it at length a deadly poison."

Town and country air.

Dr. Farr thus contrasted the effects of town and country air upon infant life:—

"In the healthy districts of the country, out of 1,000,000 born, 175,410 children die in the first five years of life; but in the Liverpool district, which serves to represent the most unfavourable sanitary conditions, out of the same number born, 460,370—nearly half the number born—die in the five years following their birth. This is 284,960 in excess of the deaths in the healthy districts."

Overcrowded nurseries.

English nurseries are, as a rule, tolerably well looked after, but even there overcrowding produces its effect. A report to the Obstetrical Society says, "A nursery of three or four children never does well. The air becomes foul, and they all droop and fall away in flesh, even with the best food, attendance, and cleanliness."

Results attained by

More than half a century ago, every sixth child born in the Dublin Lying-in Hospital died within a fortnight

CHAP. XI.

improving ventilation.

of its birth, and lock-jaw was almost the sole cause of death, just as now happens in the native quarters of Calcutta. Means were then adopted to secure the efficient ventilation of the hospital, and the mortality at once fell to 1 in 20. A few years later it fell to 1 in 59, and but little more than one-ninth part of that mortality depended upon lock-jaw.

Native children of Calcutta.

Already I have alluded to the enormous mortality of the native children of Calcutta, but the whole state of the case is altered when the first year of life is over, and they "pass their time freely in the open air. Those who survived the suffocation of their earlier days now show the effect of exemption from the specific diseases and misfortunes of English children, in a death-rate lower than that of England, between the ages of one and five years" (Payne).

Amount of ventilation necessary for each room.

An adult will spoil 1,000 cubit feet of air in an hour. A child, no doubt, will vitiate a smaller quantity, but the difference is not so great that it is to be practically considered. An opening $3\frac{1}{2}$ inches each side of a square will admit, without draught, 1,000 cubit feet per hour. A chimney or other similar opening will suffice for the exit. This is the least size of ventilating opening necessary for each individual; but in India, in the cold weather, ventilation is practically unlimited. In the hot weather all the conditions which regulate vetilation in temperate climates are reversed, the hot air being without and not within the house. Although the doors must of necessity be closed during daytime, the houses are very roomy, the rooms all open into each other, the outer doors are frequently being opened, and all night every aperture is thrown open. Children should

occupy the largest rooms. Drying clothes at a fire in a nursery should never be permitted. All soiled clothes and napkins should be removed instantly from the dwelling-house.

Evils of soiled clothes in a nursery.

This latter is a most important matter. If the mother does not see to it herself, the ayah is pretty sure to go to very little trouble about it; indeed, the mother is often quite satisfied if the soiled napkins be removed to the other side of a bath-room curtain, or door which is being constantly opened. Highly injurious gases are largely emitted from such soiled linen. Another filthy practice of ayahs in charge of nurseries is to empty chamber utensils upon the pucca flooring of the bath-rooms. In illustration of the very fatal nature of an atmosphere so vitiated, I cannot forbear quoting the following from Dr. Routh's work:—

Illustration quoted.

"Some years ago there was connected with the Cripples' Home an infant nursery, where babies were taken in to nurse during the day. The whole arrangements of the place were put under my care. I had an experienced nurse; the diet was judicious to a degree. Cleanliness extreme, both in the infants, and the room, and the attendants. Yet the children did not thrive; they died in large numbers of 'muguet' and diarrhœa. One remarkable circumstance observed was that there was a faint odour always present in the room; yet it was a large room, about 50 ft. to 60 ft. long. One side of the room was made up of windows, which went up about 10 feet, where the roof bevelled up in an inverted V shape, but which raised the room some 7 or 8 feet more in height at the centre.

"Do what I would, I could not get rid of this smell. One day, being much annoyed thereat, I procured some long steps, which extended some three feet above the upper ledge of the windows. On walking up, no sooner had I got my head one foot above their level, than I found a terrible odour that made me feel giddy and sick, and I was glad enough to come down. I instantly sent for a workman, and desired him to remove three or four tiles at each end of the room, on a level with the highest point of the roof. He did

CHAP. XI.

so. In ten minutes all smell had disappeared, but his work was no sooner ended than he was taken very ill—giddy and practically sick—so completely had he been overcome by the pestilential atmosphere.

"Some idea may be formed from this anecdote how intensely poisonous a baby nursery may become, even where great care is taken and plenty of air apparently supplied."

Soiled napkins should be at once thrown into a vessel of water kept for the purpose, and removed from the house altogether.

Light.

Children are not likely to suffer from want of *light* in India; but light is sometimes too much shut out of the nurseries of the upper classes. Glare may be excluded, but not light. Want of light bleaches humanity as well as plants, and diminishes vitality.

Bathing.

*Bathing.*—All the evils which arise from exposure to cold through insufficient clothing may very easily be acquired by injudicious bathing. It is not necessary to enter into a description of the innumerable pores of the skin, the necessity for keeping them free, and, through them, preserving the function of cutaneous respiration, which is absolutely essential to perfect health, because personal cleanliness in India is, on the whole, well attended to.

Particular cleanliness essential in India.

It is not only external dirt that has to be removed by the bath, but that portion of the internal waste which finds its way out of the body through the skin, and which, when permitted to accumulate, blocks up the pores, and forms a much worse kind of dirt. In India the skin is called upon to do more of this sort of work than in England; in fact, the skin is, in India, a more important structure.

Daily bathing.

Every morning, immediately after the early walk, the child should have his bath, which should, in infancy

and early childhood, be tepid, so that there be no great shock conveyed. Especially during the hot weather and rains, tepid water should be used, but the temperature should never be such as to render the bath so agreeable that the child desires to prolong the operation unduly. It is quite true that the cold bath may be used by children with much less risk than by the adult; and it is equally true that many children may with great security be bathed daily in cold water; but, as a rule, the liability of the internal organs to congestion in India is sufficient to make it a risk. Even in a temperate climate, when for larger children the cold bath may be the proper thing, there must, for the moment after bathing, be an increase of the blood sent to the liver, spleen, and kidneys; but under such circumstances the constitutional vigour is sufficient almost instantly to re-establish the natural distribution. It is not so in India; the internal organs cannot so readily free themselves again, and a permanent congestion may be established.

Cold water should not be used.

Objections to the cold bath.

Every day, in sickness or in health, a child's body should be cleansed in every part. Sometimes it may not be possible to place a child in a bath: then it should be sponged, limb by limb. When it is not thought judicious in very severe illnesses to run even this slight risk of chill, it is seldom that frictions with oil, a very efficient means of cleansing the skin, will not be admissible.

Cleansing the skin in sickness.

There are other objections to the use of cold water for bathing children. Except when the body is suffering from the unnatural heat of fever, the effect of cold water is depressing. It is true a stimulating effect

Depressing effect of cold bath.

CHAP. XI.

succeeds, but in order to ensure this latter it is essential that the bath be very brief, hardly sufficient for the cleansing of the skin of a child who has been actively engaged all day in a hot climate, and the dressing must be very rapid. In neither of these matters are ayahs to be trusted, and if they are neglected, chilliness and languor ensue; that is, a weakening shock without any reaction is endured.

Temperature of the bath.

The water of a child's bath should never be below 70° temperature. During the first nine or ten months a blood heat is desirable. A greater heat is likely to be injurious. A very hot bath is not only injurious, but actually dangerous. Steiner mentions the case of "a midwife, who from want of proper appreciation of the temperature in which she washed the children, used it too hot, and in the course of two years among 380 births lost 99 children of lock-jaw."

Dangers of overheated bath.

Avoid frightening child.

If a child evinces any terror of its bath, a good plan is to place a sheet over the tub, so as to conceal the water. The child is then to be gently lowered into the tepid water upon the sheet.

# PART II.

## The nature, mode of spreading, prevention, and detection of the Illnesses of European Children in India.

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## CHAPTER XII.

### THE NATURE OF THE SICKNESSES WHICH MOST PREVAIL.

(1) ACCORDING TO SEASON. (2) ACCORDING TO AGE.



SECTION I.—*Sickness according to the Season.*—In determining the sicknesses to which a European child in India is liable, and against which at certain seasons and certain ages it is necessary to take precautions, the statistics of soldiers' children afford reliable information, in that these children are sufficiently exposed to the climate and other peculiarities of life, and yet are not so well cared for as to influence the results of Indian residence; nor are they so very badly cared for as to vitiate the value of the lessons taught. For these reasons the following summary is based upon their records.

The statistics of soldiers' children give full information.

The most unhealthy months are July, August, and September — one-third of the total admissions and

CHAP. XII.

The relative healthiness of each month.

about one-third of the deaths then occur; and December, January, and February are the healthiest months. A gradual rise to the beginning and fall from the end of the first-named period is marked by the figures with singular regularity. The increase of mortality and sickness is coincident with the advent of extreme heat and damp.

As to the kind of sickness to be apprehended and specially guarded against each month, and the attendant fatality, the following general statement will suffice for the present purpose. *January* is a healthy month; but those children who, during the continuance of the rains, had been so much affected with fever or malarial influences as to have the general health injured, suffer much from the cold. In such subjects, fever is apt to recur upon exposure; or, although only ailing during the rains, never having had actual fever before, they may now for the first time be attacked (as frequently happens to children sent to the hills for the benefit of their health), as though the malarial poison, which before had found a gradual exit through the skin, is now accumulated in sufficient force to develop fever. Great precautions are, therefore, necessary to clothe such children warmly, and to prevent exposure to night air. Under undue exposure to cold, existing congestion of the spleen will increase. But it should always be remembered that the cold weather is a season of blood-making, wherefore it is incumbent upon the parent to allow his child to be as much as possible out of doors. Fevers give the greatest number of admissions, though *primary* malarial fevers are uncommon. Next in order of frequency, we have the debilitated cases remaining from the hot and

January.

Chills produce fevers.

Spleen congestions.

The cold weather the season of blood-making.

Secondary malarial fever common.

rainy weather, the cold often telling severely upon such children. Diarrhœa is, in healthy children, in abeyance, and is readily amenable to treatment. Cases of this affection now occurring are manifestly traceable to bad management, unless they be in a chronic form, and the result of malarial debility.

Diarrhœa in abeyance.

The child is liable to bronchitis and other chest affections, though not so much as during the rains. During this and the other cold months there is liability to measles and whooping-cough, which increases till the rains set in. So far as figures are concerned, dentition would seem to be peculiarly easy, but many illnesses which occur during the more unhealthy months are attributed to teething, wherefore much reliance cannot be placed upon statistics in this particular.

Liability to chest affections.

Measles and whooping-cough.

Dentition apparently easy.

*February* is the most healthy month of the whole year, but chest affections are more common than at any other period, particularly among children between one and two years of age. The cold weather has continued sufficiently long to have produced a marked effect, and to have diminished the number of general debility cases. Fevers are more uncommon than at any other period of the year. Head affections and convulsions are infrequent. This is a month in which the child should spend most of his time out of doors and at play.

February is the healthiest month, but chest affections common.

*March.*—There is a marked increase in the number of bowel complaints. The accession of heat increases the number and fatality of cases of convulsions and head affections. Measles becomes more frequent, but it is not fatal. There is danger of infection of small-pox, owing to the native practice of inoculation during the cold season. The fevers increase, probably owing to

March.

Effects of heat noticeable.

Measles.

Danger of small-pox.

Fever and dysentery.

CHAP. XII.

improper exposure to the sun. Dysentery becomes an item of importance.

April. Diarrhœa and dysentery increase.

*April.*—Diarrhœa and dysentery become still more formidable and fatal, being four times more common than in January. Fevers continue to increase and to yield an appreciable mortality. Chest affections are rare: croup is uncommon. The danger of small-pox infection continues. Cases of convulsions from the ardent fevers produced by exposure to the sun are common; or, such cases running a more rapid course, may terminate as infantile paralysis or fatally as heat apoplexy. The malarial debility cases, if properly nourished, improve, on the whole.

Sun heat produces some formidable cases.

May. Somewhat better.

*May* seems to be a somewhat healthier month than April, the constitutional shock of the sudden accession of heat having passed off to some extent; and the greater intensity of the heat, compelling greater care and less exposure, no doubt helps to the general result. Head affections and dentition continue to yield results very similar to those of April. Fevers retain their April position. Dysentery and diarrhœa give somewhat fewer admissions, and they cause fewer deaths, by half. Chest affections are uncommon. The depressing effects of heat are much felt. The want of house-room, or anything like overcrowding, will serve to produce very baneful effects. Great care is necessary that children get a sufficiency of air and play. They may with safety be permitted to prolong their airing, after dusk. The mid-day sleep, in a pure atmosphere, is now very essential.

On the whole much same as April.

Depressing.

Exercise after sunset.

June. Marked falling off.

*June.*—A considerably less healthy month, the rains in the lower provinces having commenced. Measles

and whooping-cough reach a climax. Fevers, and consequently debility cases, increase considerably. Bowel complaints cause the greatest loss of life, but fevers also prove fatal. Debility cases are quite 30 per cent. more common than in February. The cooling which was produced during the hot dry months by evaporation is absent, consequently the heat is felt to be particularly depressing; but the air itself is cooler than it was, therefore we can and should admit fresh air more plentifully, and this is necessary to the cooling of the body. Once the rains have set in, exercise should not be prolonged into the dusk of the evening.

Is generally depressing.

Late evening exercise dangerous.

*July.*—Still more unhealthy. Great increase of fevers and bowel complaints. Diarrhœa, convulsions, and debility are the chief causes of death. Infectious eye complaints prevail among the natives, and are to be avoided. Cholera causes a considerable mortality.

July. Increase of unhealthiness.

*August.*—The most unhealthy month of the whole year, and the most fatal. Cholera rife. Diarrhœa and dysentery at their climax. Convulsions and illness attributed to dentition cause many deaths. Cases of bronchitis not infrequent, owing to vicissitudes, and they are prolonged by the weakened state of the constitution, and probably by night exposure. Infectious eye complaints very common. This month seems to be favourable to croup.

August. The most unhealthy month.

Bronchitis.

*September.*—Some improvement in the general health. The nature of the sickness and the fatality remain much the same as in August, except that the number of fever admissions increase, but the mortality and total number of admissions decline slightly.

September. Some improvement.

CHAP. XII.

October. Marked improvement.

*October.*—A marked improvement. The admissions diminish by one-fourth and the deaths by one-third. Fevers still prevail to the same degree, and are nearly as fatal. Cholera mitigated. Bowel complaints diminish very greatly. The month seems to be unfavourable to the development of croup. Convulsive affections and dentition cause fewer admissions and deaths. Measles has declined to its lowest point.

Nervous and bowel complaints less.

November. Conditions slightly better.

*November* shows a slowly continuous improvement. The diminution in sickness and mortality is maintained, but fevers give a high mortality rate, and are prevalent. Bowel complaints incline to diminish.

December. Great improvement.

*December.*—Great diminution in both admissions and deaths. Malarial fevers reduced by from one-half to two-thirds, dysentery by one-third, and diarrhœa by two-thirds upon the rates of the previous two months.

Immunity from certain diseases.

Such is a very imperfect sketch of the year as it affects the European child in India. In glancing over it, one cannot but be struck by the absence of any mention of such affections as consumption, scarlet fever, or small-pox.

The most common diseases are largely preventable.

A very cursory attention to these details will show that care will be able to effect a great deal—in fact, to alter the whole story from the present narration to that which Payne and Fayrer relate of the European child in Calcutta.

Most common affections in order.

In order of frequency the most common diseases are—

1. Fevers, during the rains and in autumn. Preventable to a great extent by avoiding exposure, and by suitable clothing.

2. Diarrhœa and dysentery, with the first accession of

hot weather, and during the rains. Largely preventable by attention to diet.

3. Eye affections, during the rains. These should not be known in any well-regulated nursery.

4. General debility does not observe seasons, but is frequently the result of Nos. 1 or 2.

5. Measles, at the end of the cold weather. Prevented by avoiding infection.

6. Chest complaints, at the end of the rains and in the cold seasons. Prevented by avoiding exposure, and by proper clothing.

7. Dentition (so called) bears a ratio to the intensity of the heat, by which nervous susceptibility is increased. Chiefly to be avoided by preventing violent diarrhœas and fevers.

8. Convulsions during the hot season and rains, for the same reason. Means of prevention the same.

Most fatal affections in order.

The most fatal affections are in due order—

1. Debility and wasting.
2. Convulsions.
3. Illnesses during dentition.
4. Diarrhœa.
5. Fevers.
6. Chest affections.
7. Dysentery.
8. Head affections.
9. Tabes mesenterica.
10. Croup and diphtheria
11. Measles.
12. Whooping-cough.

N.B. — Cholera is here omitted.

Difference between India and England.

It is not necessary here to enter into an exact comparison between the kinds of sicknesses which prevail in India and England. In illustration, however, of the vast difference that really exists, it may be mentioned that in England scarlatina heads the list of fatal

CHAP. XII.

diseases for the 2nd, 3rd, 4th, and 5th years of life. Whooping-cough stands second for the 3rd, 4th, and 5th years. Inflammation of the lungs is third for the 2nd, 3rd, 4th, and 5th years; and bronchitis is fourth. Now these diseases hardly count at all in the Indian bills of mortality.

Fatal sickness most common at each age.

SECTION II.—*Sickness according to Age.*—Regarding each period separately, we find that *under 6 months* of age the total mortality of soldiers' children is from about 260 to 300 per 1,000. Diarrhœa, convulsions, and debility, at that time, cause most of the deaths; but it is very difficult to judge how far each of these may not have been really a part and parcel of some other, for a case is naturally returned under the heading for which it came under treatment. I believe diarrhœa to be the chief originator of the others, and that the lamentable loss of life of soldiers' children even at this age is due to that truly preventable affection; at all events, it is certain that these causes of death are rare among the English infants of Calcutta, and that if they were similarly scarce among the soldiers' children, the statistics of the latter would be referred to as a proof of the healthiness of India to the European child, instead of being used, as at present, to demonstrate its unhealthiness. We have a practical reply to the questions, —Can they be removed? Is it mere theory to affirm they can, or is it really practicable? In short, remove this great blot, and reduce the mortality of this period to the Calcutta civilian scale, and the whole question would bear a different aspect.

Under six months.

High mortality at this age peculiar to the army.

In a former chapter (p. 11) we have seen that 17,000 infants are sacrificed in England above the

Scottish standard because of a simple difference in the matter of feeding. In this respect the soldiers' wives chiefly err. A very large proportion of the children born to them die at this age; and of these, some two-thirds succumb to affections which are mainly preventable, representing that number of lives wasted. The practical lesson here taught is that which has been frequently inculcated throughout these pages, and which, at the risk of being tedious, is again repeated—feed a child *only* on milk till the first dentition, and let that milk be its mother's. The thick satisfying foods mean death. A child at this age is of course liable to croup, bronchitis, and whooping-cough, but these affections run a mild course in India; and there is a singular exemption from cholera.

Chief cause of high mortality of soldiers' children.

*From* 6 *months to* 1 *year* the total mortality is about 150 per 1,000. The soldier's child's chance of living is increased by about one-third upon the former period. Bowel complaints still claim a large proportion of victims, convulsions are twice or three times less fatal, and dentition is credited with a large ratio of deaths. Anæmia and debility during this and the succeeding six months cause more deaths than at any other period of the child's life—a condition usually indicating malnutrition consequent upon ignorant and injudicious feeding, though some such cases arise no doubt from fever and spleen. The child becomes more liable at this age to dysentery. There is greater liability to brain affections than subsequently. In fact, the nervous impressionability is so high that teething, if there be general mismanagement, produces a high mortality. The digestive organs still require tender care. The

From six months to one year.

Commoner diseases.

CHAP. XII.

liability to chest affections is increased, and cholera comes upon the scene, though very sparingly as yet.

One to one and a half years.

*From* 1 *year to* 18 *months.*—Total mortality varied from 124 as an average for all India to 171 for Madras in 1891. Diarrhœa reaches its highest fatality. Dysentery holds its own. Brain affections and convulsions slightly decline. The proportion of deaths attributed to "dentition" remains much as during the former period. Chest affections are more formidable than at any subsequent time, the child being able to expose but not protect itself either by exercise or intelligence. To whooping-cough and measles there is full liability. To the fevers of the country there is considerable liability (16 per 1,000 dying from them). Cholera becomes an appreciable item of mortality; and the liability to croup increases.

Commoner diseases of this period.

One and a half to two years.

*From* 18 *months to* 2 *years.*—The mortality is reduced to one-third of the former period; the child's digestion being much stronger, it is able to utilise the foods which before tended to kill it; therefore we find diarrhœa reduced by one-half and dysentery by one-fourth of their former fatality. The nervous excitability is lessening, and the period of first dentition is for the most part over, therefore the liability to convulsions and brain affections are much less common. The child is able to take exercise; wherefore chest affections recede in number and seriousness. The cholera liability increases, but measles and whooping-cough are less fatal.

Bowel complaints lessened.

Two to three years.

*From* 2 *to* 3 *years.*—Mortality now about 30 to 40 per 1,000, though twenty years ago it was more than double the former figure. The cholera mortality is

Cholera liability increased.

doubled. Measles is more prevalent. Dysentery becomes more frequent and formidable. Diarrhœa, with increasing age, becomes less dangerous, though there is still special liability to it, and it is the principal cause of death. Chest affections are tolerably common. Convulsions and brain affections diminish much. Measles is common.

Three to four years.

*From* 3 *to* 4 *years.*—Total mortality about 20 (from 17 in Bengal to 35 in Bombay in 1891) per 1,000. Cholera liability still further increased. Measles less fatal. Convulsions and brain affections claim but few victims. Dysentery increases, and diarrhœa decreases. Chest affections less frequent and fatal, the child being more capable of exercise and self-care. Fevers increase in seriousness.

Four to five years.

*From* 4 *to* 5 *years.*—Total mortality about 15 per 1,000. Malarial fevers prevail. Diarrhœa becomes an inconsiderable item. Cholera liability continues. Convulsions and brain diseases uncommon. Croup liability continues.

# CHAPTER XIII.

## ON THE SPREADING OF DISEASE, INFECTION, AND DISINFECTION.

CHAP. XIII.

Infectious diseases not common in India.

CHILDREN'S sicknesses of an infectious nature are more common in England than in India,—particularly is this so with regard to scarlatina and whooping-cough; but we meet with all the European varieties in India, though to a less extent. They include the following:—Scarlatina, whooping-cough, measles, small-pox, diphtheria, typhoid fever, dengue, influenza, and erysipelas.

Some of these diseases are capable of being spread by means other than those which are ordinarily termed infectious,—as, for instance, typhoid fever through the medium of water; and scarlatina and diphtheria have both been largely disseminated through the agency of milk, many of those attacked never having been near sick individuals.

Diseases spread through water.

There are other affections which are spread almost wholly through the instrumentality of water, and are not therefore in the popular sense of the term infectious; such are cholera, dysentery, and some kinds of intestinal worms.

Malarial diseases.

Again, there are certain diseases termed malarial, which have their origin in the soil, and which are not in any way transferable from individual to individual.

What is infection? By the expression "infectious" we mean the capacity of a sick individual to propagate his disease to others; but of the infection itself, that is of the actual agent, we knew very little till comparatively recently. Formerly the air surrounding a patient was known to be tainted; some impalpable change was vaguely supposed to have occurred in it. But now, through the labours of scientific men, we have been led several steps in advance. We now know that infectious diseases are multiplied by germs or seeds which are given off from those who are ill, and which, sown in the bodies of others, produce the same diseases in them. CHAP. XIII. The nature of infection. Is a seed.

The important points to know are, that the infective material is a congregation, more or less numerous, of living germs or seeds; that it consists of particles which, in some cases, have been isolated, seen, and measured; and that the particles possess life. "The contagium particles in a patient's breath resemble an enemy's bullets. The breath would be harmless without the particles, just as an enemy's powder would be harmless without his bullets" (*Med. Chir. Review*, 1877). Nature of the seed.

Professor Tyndall states the case thus plainly and popularly:— Tyndall's description.

"From their respective viruses you may plant typhoid fever, scarlatina, or small-pox. What is the crop that arises from this husbandry? As surely as the thistle arises from the thistle seed, as surely as the fig comes from the fig, the grape from the grape, the thorn from the thorn, so surely does the typhoid virus increase and multiply into typhoid fever, the scarlatina virus into scarlatina, the small-pox virus into small-pox. What is the conclusion that suggests itself here? It is this,—that the thing which we vaguely call a virus is to all intents and purposes a *seed*: that in the whole range of chemical science you cannot point to an action which illustrates this perfect parallelism with the

CHAP. XIII.

phenomena of life—this demonstrated power of self-multiplication and reproduction. There is, therefore, no hypothesis to account for the phenomena but that which refers them to parasitic life."

Why the specific fevers do not recur.

Each kind of contagium particles requires its own peculiar kind of nourishment. Thus, measles attacks a patient who has never had the disease before; it feeds upon those elements of his body and blood essential to its nourishment; it exhausts the body of its special food, making it impossible for another germ of the same species to grow in this exhausted soil; and thus, as a rule, removing the possibility of a second attack of this kind of disease. The food which is required for the germs of those diseases which occur only once in a lifetime is of a nature that, when once abstracted from the body, it is not reproduced.

Vitality of germs.

The poisons of some diseases are very easily got rid of by ventilation alone; but the viruses of such affections as small-pox and scarlatina will spread in spite of the freest ventilation upon finding appropriate resting-places, and they may thus lie dormant for long periods. The membrane of diphtheria and the skin-scales of scarlatina may be exposed to dry air for weeks, and still retain their potency. Cases are on record where for years old and uncleaned walls have retained and propagated small-pox.

How the germs enter the body.

The modes by which the disease germs enter the bodies of previously healthy persons are numerous. The particles which are thrown off from the infected body pass into the air which may be breathed; or, from the air they get into water or milk or other food, and thus gain access to the stomach; or they may light upon a broken surface, such as an ulcer or a wound, as occurs in cases of erysipelas.

The giving off of the infection takes place most actively from those parts of the infected individual's body which are the chief breeding-places of the particles. Thus, from the skin and expectoration in measles; from the mattery discharge and skin in small-pox; from the mouth and skin-scales in scarlatina; from the stools in typhoid fever; from the vomited matter and stools in cholera; and so with others.

How given off from the sick.

The ways in which diseases are spread through human agency are almost innumerable. The dhobee, if permitted to wash for others, may disseminate small-pox or scarlatina. The tailor, who is allowed to take away work to his wretched hovel, may ply his needle close to diseased persons. Convalescents too early coming into contact with the healthy afford the most common means of propagation.

Infection through human agency.

The living nature of the disease particles being understood, it becomes quite evident that if we can destroy them or their vitality before they find an appropriate soil for their further growth, we prevent the spread of the particular disease. To accomplish this end we endeavour to deal with the poison at the seat of its origin, as far as it may be accessible to disinfectants, in conjunction with other preventive measures, such as ventilation and guarding against the entrance of the poison into water; but as these matters cannot well be separated, they had better be discussed in detail under the heading of each disease in the next chapter. We must, however, also adopt general measures, and of these we now proceed to speak.

The object of disinfection.

*As to the sick room.*—An abundance of fresh air should be admitted, a large room selected, and no curtains, carpets, or tablecloths allowed; light should be admitted

Management of the sick room.

CHAP. XIII.

freely, unless the nature of the case requires otherwise; slops and stools should be instantly removed; soiled linen should be placed at once in a solution of lime chloride; and as little communication as possible allowed between the sick and other inmates of the house. Other children should be removed to a distance; and should the patient die, speedy interment should be adopted.

Disinfection of the empty room.

*Disinfection of the empty room.*—After removal of the patient, all windows should be thrown open, all woodwork should be thoroughly washed with soap and water to which carbolic acid (1 pint to 4 gallons) has been added, and the furniture afterwards removed into the open air. All fabrics should be placed in a solution of chloride of lime in the room, and then removed from it. The walls should then be brushed, and when the dust has blown away or subsided, every window and door should be carefully closed. Then a sufficiency of sulphur (Gunduk) should be procured and placed in different parts of the room upon open earthenware dishes, and set alight. The quantity of sulphur required will be about ½ seer for every 1,000 cubic feet of space (a cube measuring 10 feet in all directions). For about 4 hours the room should be kept closed; then throw it open for 24 hours. If the walls are whitewashed, they should be scraped and re-washed, carbolic acid having been added to the whitewash.

Disinfection of clothing by heat.

*Disinfection of clothing.* — Compressed steam, when available, is the best means of accomplishing this; an extremely high dry heat is also a very efficient mode; but except in large towns, where special apparatus exists, these plans are usually

impossible. A baker's oven might be improvised, by placing sand upon its floor to prevent injury to the clothing, which should then be suspended upon lattice-work within the oven. But by properly conducted soaking and boiling, the object may usually be effected. By adding 1 gallon of the strong commercial solution of chloride of lime to 20 or 30 gallons of water, or adding 6 oz. of the powdered chloride to a gallon, or making a solution of carbolic acid (1 pint to 100), we get a good solution, in which infected clothing should be soaked for 24 hours, after which it should be boiled and dried. But these solutions will injure delicate fabrics. Fumigation with sulphur is another method of purifying clothing. The articles should be suspended in small closed chambers, and a large quantity of sulphur set on fire beneath them. Mattresses should be pulled to pieces, and their interiors destroyed by fire or thoroughly fumigated.

Soaking.

Fumigation.

The following summary * may be usefully inserted here :—

Suggestions by the Schools Association.

DISINFECTION.—A few suggestions as to the means for carrying this out effectually will not be out of place in connection with the management of infectious cases.

I. CARBOLIC ACID.—Useful for disinfecting sinks, w.c., &c. (a wineglassful to half a pint of warm water); and for washing walls, furniture, &c. (a wineglassful to a pint and a half of water). Also used as spray (1 in 40), as soap (10 per cent.), and as carbolised oil for anointing the skin in scarlet fever (1 in 60).

II. CHLORIDE OF LIME (Bleaching Powder).—Must be kept

* Appendix B to "A code of Rules for the prevention of infectious and contagious diseases in schools, being a series of resolutions passed by the medical officers of Schools' Association." (J. and A. Churchill, London.)

CHAP. XIII.

in a dry place. Add 1 lb. to 1 gallon of water for sinks, W.C., drains, &c. A weak solution (1 oz. to 1 gallon of water) may be used for *quickly* rinsing soiled linen before being wrung out in clean water.

III. CONDY'S FLUID (Permanganate of Potass).—For sinks, utensils, washing floors, &c. (one teaspoonful to a pint of water, or one wineglassful to a gallon). The solution is useful *only* so long as it retains its pink colour. Linen should be *quickly* rinsed in it, lest it become stained.

IV. SULPHATE OF IRON (Green Copperas).—1 lb. dissolved in 1 gallon of water for drains, utensils, W.C., &c.

V. SULPHUR (Sulphurous Acid Gas).—For disinfecting unoccupied rooms. Tightly close the windows, ventilators, fireplace, &c., pasting slips of paper over cracks if necessary, and stuffing a sack of chaff or shavings up the chimney. Care must be taken to employ *enough* sulphur (1 lb. to each 1,000 cubic feet of space—PARKES), and, if the room be a long one, the sulphur should be divided into two or more portions. Place the sulphur in a tin or iron dish, large enough to hold it all when melted; place the dish on a brick or other support in an iron pail or common earthenware pan; pour some water into the bottom of the pan, to receive any melted sulphur which may run over. The sulphur is then to be ignited (by pouring a little spirit of wine on to it and lighting it), the door closed, and the room left for eight to twelve hours. The room may then be cautiously entered, windows, &c., opened, fire lighted, and the walls, furniture, &c., washed with the dilute carbolic solution, or with hot water and carbolic soap.

VI. CHLORALUM is also useful. TEREBENE and SANITAS (fluid and powder) may be conveniently employed in the sick room and about the patient.

VII. HOT AIR.—Wearing apparel, bedding, &c., must be baked at a temperature of 220° to 300° F., for at least one hour.

VIII. HOT WATER.—All linen suspected of infection should be *boiled* at the wash. Superheated steam is used for disinfecting clothing, bedding, &c., by means of special apparatus.

N.B.—*Carbolic Acid and Sulphurous Acid Gas* may be used together, but neither should be used with Condy's Fluid, Chlorine Gas, or the Chlorides (as Chloride of Lime).

All Disinfectants should be regarded as Poisons.

## CHAPTER XIV.

### THE CAUSES AND PREVENTION OF THE MORE COMMON DISEASES.



"THERE are two modes," says Dr. Parkes, "by which we may attempt to prevent the occurrence of disease." 1. By conforming with the general rules of hygiene, by which the health is maintained at the point most capable of resisting disease. 2. By investigating and removing the causes of disease. The precise cause of some diseases is not perfectly understood. Then "we must act, as in so many other affairs, on probability, and endeavour to remove those conditions which, in the present state of our knowledge, seem to be the most likely causes." How to prevent disease.

ATROPHY OR WASTING.—This condition is curable at almost any stage "by conformity with the general rules of hygiene," more especially those laws which have been explained in chapters VI. and IX. Atrophy is not a disease, it is merely a symptom, and in the case of young infants it is, in the great majority of cases, a symptom of mal-nutrition. Extreme thinness, absence of fever, a yellow dry skin, cold hands and feet, whining, griping, often a ravenous appetite, and not infrequently diarrhœa and vomiting are the symptoms. Something is pretty certainly wrong with either Atrophy. Symptoms.

CHAP. XIV.

Causes.

Management.

the quantity or quality of the food, and it has been already explained that either error means starvation, or starvation *plus* irritation. Chills, overfeeding, or a dirty feeding bottle may produce symptoms of gastric and bowel derangement, which, if not properly managed, may occasion rapid wasting. A child who obtains its nourishment from a nurse whose child is much older may so suffer. All these points have been separately dealt with in chapters V., VI., and IX.

Atrophy in older children.

When older children waste away they should be examined for rickets or mesenteric disease, and when still older (after five), consumption, diabetes, and worms should be thought of.

Malaria.

MALARIAL FEVERS.—Malaria is that condition which makes the climate of India so obnoxious to the European. By numerous observations it has been established that some aëriform material of a poisonous nature is exhaled from marshy or wet grounds in the process of drying. A high temperature, under certain conditions of moisture, is evidently necessary to its extrication and development. These conditions we have in India, to perfection, during the autumn months.

An emanation from the soil.

May be introduced through drinking water.

There is also some strong evidence tending to prove that drinking water from a marshy soil is capable of introducing the poison into the system. "One very important circumstance is the rapidity of development of the malarious disease, and its fatality when introduced in water," observes Parkes, after an analysis of the evidence on this point.

Air of marshes.

The air of marshes is proved to contain a considerable quantity of organic matter (of plants, animalcules, and insects).

We see, then, that there are two modes by which the poison may be introduced into the system,—viz., through the air and through water.

Water not a source of great danger.

As to the latter, or water origin, the dangers (the usual precautions being observed) are not great. The water of wells is supposed to be safe, but it may be otherwise if the well exists in low-lying, swampy ground. The water of tanks is not so safe; but we possess such easily applied and thorough means for its purification (p. 72), that there remains no excuse for the consumption of a dangerous water, except among the extremely poor. The examination of the source of supply, filtration, and attention to the details laid down at p. 71 are the simple and efficient means of prevention.

Prevention.

As malaria does not naturally exist 3,000 feet above the sea-level, where there are no marshes, removal to such a height, when it can be adopted, is an obvious means of prevention. When the locality cannot be left, the choice of a well-ventilated house which is raised some feet from the ground-level, situated on the highest attainable spot, and removed as far as possible from marshy ground, is a matter which should not be neglected. Dense herbage in the compound should not be allowed, though trees, which do not impede the ventilation of the house or of the soil, are beneficial. Indeed, belts of trees between a marsh and a station are a recognised mode of preventing the access of the poison. During damp weather the very early morning and night air should be avoided. Chills undoubtedly are capable of developing fevers of this type; but it is not generally believed that they, without the previous

Chill as a cause of fevers.

CHAP. XIV.

imbibition of the poison, can of themselves originate a malarial fever or condition. They do not do so in temperate climates, but they certainly are an exciting cause in India (p. 124). The administration of quinine in small doses is the only preventive known, so far as medicines are concerned. Warm clothing, observance of the precautions above enumerated, and the partaking of food before exposure, are other and important accessory means.

Cholera but very slightly infectious.

CHOLERA.—All evidence opposes the idea that cholera is infectious, *i.e.*, that its poison is exhaled from the body. From this it might be thought that the cholera patient may be approached with impunity. This is not altogether so, for it is certain that the motions and vomited matters of cholera patients are the most powerful means of conveying the poison. "It cannot," said the late Sir J. Simon, "be too distinctly understood that the person who contracts cholera in this country (England) is, *ipso facto*, demonstrated with almost absolute certainty to have been exposed to excremental pollution; that that which gave him cholera was (mediately or immediately) discharged from another's bowels; that, in short, the diffusion of cholera among us depends *entirely* upon the numerous filthy facilities which we let exist, and especially in our larger towns, for fouling of earth, air, and water; and thus, secondarily, for the infection of man, and whatever contagion may be obtained in the miscellaneous outflowings of the population." Therefore, when treating a cholera patient, the destruction and disposal of the evacuations should receive special attention (p. 146). The vomited matter and stools of a cholera patient

Yet may be spread from person to person.

The evacuations the great means of spreading.

soon dry up and become capable of diffusion in the air, whence infective particles may enter the bodies of other persons, or, adhering to their clothes, they may be carried about: hence it is necessary to avoid those who are stricken with the disease; and children should be removed from the vicinity. But the particles may be conveyed into drinking water, or into food, as well as into the lungs, in the manner mentioned, whence they may obtain access to the bodies of others. The chances of imbibition through the air are not great, if we judge by the very small number of attendants upon the sick who are attacked. Spreading through the medium of water is the most common. Numerous facilities for the pollution of water exist in India. Macnamara affirms that when cholera stools are added to water, the water becomes capable of disseminating the disease when certain microscopical forms of life appear; but not till then, and not after their disappearance. The cholera poison is capable of preservation in an active state for a very long time if kept dry, as it may be in soiled clothing, or in the soil. When it gains access to a suitable place its virulence is called forth. Such, in a few simple words, are the conclusions to which laborious investigation has led.

Spread through the stools and vomited matters. By air.

Or food.

Attendants seldom attacked.

By water.

Period of activity of the germ.

Vitality great.

The measures for prevention are, therefore, obvious. (*a*) Firstly, the most scrupulous attention should be paid to the drinking water, the precautions detailed at page 72 being sedulously carried out. "If," writes Dr. Macnamara, "we can only establish the principle that nothing but freshly and properly filtered water shall be consumed by the inhabitants of a town, barrack, or house, not only when at home but when at

Prevention.

Purity of water.

CHAP. XIV.

work—at all times, in fact, when cholera is abroad,—we may, I believe, discard all and every other means of preservation." (*b*) The sources of the food supply should also be carefully attended to. Foods should not be procured from infected neighbourhoods if they can be got elsewhere. Milk should not be procured from an infected bazaar, but the cows should be milked at the door. The possible contamination of milk with foul water should be recollected. (*c*) Should it have been necessary to touch a cholera patient, careful ablution of the hands should follow every such contact. Great care should be observed that the fingers be not inadvertently conveyed to the mouth after touching a patient or any article which had been in his use. (*d*) As diarrhœa has been proved to increase the predisposition to cholera, all irritating articles of food should be avoided during a cholera period, and all diarrhœa ought to be at once checked by astringents. (*e*) But most important of all is the destruction by disinfectants of the evacuations both from the mouth and bowels. These should be received into earthenware vessels containing earth. The moment the evacuation is thus received it should be treated with a strong disinfectant, added without measurement and with a most liberal hand, such as very strong solutions of carbolic acid, or chloride of lime, or chloride of zinc. Sulphate of copper or sulphate of iron, both of which are obtainable in the bazaar, may also be used; or, in the absence of any of these, quicklime should be employed. The next thing to do is to dispose of the disinfected evacuation, which is still to be considered dangerous, though possibly

Of food.

Avoid contact.

Check early diarrhœa.

Disinfection of the evacuations.

it may not be so. Destruction by fire is the best means. Deep burial in the soil, at a distance from any source of water supply, is the next safest course. (*f*) The clothing worn by the patient should either be destroyed by fire or thoroughly disinfected (p. 138). Robustness of health is no safeguard against cholera. Quinine is supposed by some to act as a preventive, but this is far from proved.

Disposal of the evacuation.

Good health no safeguard. Quinine.

THE ERUPTIVE FEVERS.—As to the prevention of small-pox, the reader is referred to the section "Vaccination." Of the other fevers of this class we know very little regarding their prevention, further than that good sanitary conditions lessen the chances of infection. Avoidance of a source of infection is an obvious measure; and the isolation of the sick, an imperative duty. An equally needful precaution is the adoption of the measures detailed (p. 138) regarding the management and disinfection of the sick room and clothing.

General preventive measures.

In addition to the above, the following special measures ought to be carried out during the progress of cases.

*Measles.*—The skin should be daily rubbed with oil, or camphorated oil, as soon as scaling commences, and the application should be continued until the surface has wholly resumed its natural appearance. The expectoration should be received in a vessel containing Condy's fluid, or a solution of carbolic acid, and the clothes should be disinfected before being sent to the wash.

Measles.

Special measures.

*Scarlatina.*—The throat and the skin are the points to attack in attempting to disinfect a case of this most infectious disease and its subtle poison. From the com-

Scarlatina.

CHAP. XIV.

Special measures.

mencement the skin should be rubbed with oil, or with carbolic acid, 1 part, in olive oil 50 parts (one teaspoonful sufficing for the whole body), with the object of preventing the breaking up of the minute scales and their diffusion in the air. All expectoration should be received in a vessel containing Condy's fluid or sulphurous acid. Gargles of salicylic acid should be constantly used. The strictest isolation and freest ventilation are imperatively called for. The clothing and bedding had best be burnt, or if this be objected to they must be disinfected (p. 138).

Small-pox.

*Small-pox.*—Oily applications will be found both useful in preventing infection, and grateful to the feelings of the patient. The wonderful length of time which the germs of small-pox will retain their potency should be borne in mind as regards the thorough disinfection of every article of the patient's clothing, and of the room he has inhabited. Even after the actual advent of the disease, vaccination, if promptly resorted to, may prevent the development of the disease (p. 106).

Special measures.

Whooping-cough.

WHOOPING-COUGH.—Avoidance of those suffering from this highly-contagious affection, and the isolation of the infected, are the only known means of prevention of spreading (pp. 154, 155).

Typhoid fever.

Mode of spread.

TYPHOID FEVER.—In this affection the poison enters the system in much the same manner as does that of cholera,—chiefly through polluted water. There is also evidence to lead to the belief that it may emanate from the decomposition of the contents of cesspools or other places where ordure is allowed to remain and putrefy. The medium, then, is either air or water. Of late there have been many instances of the multi-

plication of the disease through the agency of milk which has either been diluted with infected water, or allowed to stand in dairies, in close proximity to patients suffering from the disease.

A well, for instance, in the neighbourhood of a cess-pit, or of a place which formerly had been a cess-pit, may yield a typhoid-producing water. Though the disease is to be regarded as contagious in the ordinary sense of the word, it is comparatively slightly so; yet when introduced into a household or village it shows a decided tendency to spread, just as cholera does. It is very certain that a privy used by a typhoid patient becomes a source of danger to healthy persons who resort to it; the dried-up discharges polluting the air, the germs gain access to the bodies of others and infect them. "There is no evidence that the disease is conveyed at all by the breath or perspiration. It is rarely, if ever, transmitted from person to person"—(Broadbent)—though young nurses are sometimes attacked, due probably to infection in one of the above ways in consequence of neglect of precautions.

Is it contagious?

It becomes clear, this being so, that attention to the water supply, its source and purification (p. 72), and the disinfection of the bowel evacuations (p. 146), are the measures preventive of spreading. "Be lavish," said Budd, "in the use of chemicals rather than run the terrible risk of failing by default."

Preventive measures.

A privy or water-closet used by an infected patient should be thoroughly sluiced and disinfected. In fact, all the precautions called for in cholera are here just as applicable.

CHAP. XIV.

Does this mode of spreading account for its general diffusion?

To the unthinking it may seem almost ridiculous to suppose that such widespread diseases as cholera and typhoid fever are spread almost exclusively through the medium of the bowel evacuations; but, writes Dr. Budd, "every year in England more than 100,000 human intestines, diseased in the way already described, continue each, for the space of a fortnight or thereabouts, to discharge upon the ground floods of liquid charged with matters on which the specific poison of a communicable disease has set its most specific mark."

Dysentery and diarrhœa. Causes.

DYSENTERY AND DIARRHŒA.—The causes of these bowel complaints may be briefly stated to be the following:—(1) Impure water, which may bring on either complaint in children very readily. The greater the amount of organic impurity, the greater the chances of dysentery as opposed to diarrhœa. The selection of a good water and filtration (pp. 71, 72) obviate this danger. (2) Impure air is a well-known cause; particularly noxious is the air from sewage matter, the effluvium of privies and cesspools; but "of all organic effluvia those from the dysenteric stools appear to be the worst" (Parkes), wherefore it is most important that dysenteric evacuations be rapidly disinfected (p. 146), and that they never be retained longer in the house than actual necessity demands. The fumigation (p. 138) of rooms in which dysentery patients have been treated ought always to be carried out. (3) Improper food may directly cause bowel complaints by producing irritation; and indirectly by mal-nutrition of the body, whereby an unhealthy state is engendered, which is likely to expend its force upon the bowels. The denial of vegetables and fruits in the diet, for instance, is very apt to originate a scorbutic taint, which will induce dysentery of a most unmanageable nature. (4) Exposure to wet and cold frequently causes such

The effluvium of stools particularly pernicious.

Prevention.

Disinfection and fumigation.

Avoid irritating food.

Scorbutic bowel diseases.

Exposure to wet and cold.

congestion of the bowels as to produce diarrhœa, if not a state of inflammatory dysentery. (5) Malarial poisoning is often attended with diarrhœa or dysentery. In such a case the only means of prevention is to treat the malarial state. Malaria.

HEAT APOPLEXY AND SUNSTROKE are caused by excessive heat and stillness of the surrounding atmosphere, or by direct exposure to the sun. These causes may also produce serious fever. Exhaustion during exposure to heat increases the liability. The means of prevention are—(1) to prohibit exposure; (2) to arrange the clothing rationally, taking care to allow the chest full play, and carefully to guard the head and neck from direct solar heat; (3) to allow plenty of cold water at all times for drinking, as being a powerful means of reducing body heat by its direct cooling effect, and by increasing perspiration and evaporation. Causes. Prevention.

OPHTHALMIA is a very contagious dirt disease. The matter secreted by the eyes of the sick rapidly dries, and the small fragments may be blown into the eyes of others—a direct inoculation, in fact. Avoidance of any source of danger is the plain precaution; but should it occur in a household it may usually be prevented spreading further by taking precautions that towels or water which have been employed to wash the sick be not used for the healthy—a matter in which native servants are not to be trusted; that the sick be segregated as far as possible; that the freest ventilation be adopted, and the utmost cleanliness observed. A dirt disease. Prevention.

CONVULSIONS.—The most common causes are—(1) improper food, and (2) fevers occurring during the early Causes.

CHAP. XIV.

years of life. As to the first of these causes Sir Wm. Jenner writes of the children of the poor :—

Jenner's account of the rearing of the children of the poor.

"For the first two or three days after birth their tender stomachs are deranged by brown sugar and butter, castor oil and dill water, gruel and starch water. As soon as the mother's milk flows, they are, when awake, kept constantly at the breast. And well for them if they are not again and again castor-oiled and dill-watered, and even treated with mercurials, for the poor have learned the omnipotent virtues of grey powder. After the first month bread and water, sweetened with brown sugar, is given several times a day, and during the night the child is, when not too sound asleep, constantly at the breast. As soon as the little ill-used creature can sit erect on its mother's arm, it has at the parents' meal-times 'a little of what we have,'—meat, potatoes, red herrings, fried liver, bacon, pork, and even cheese and beer daily, and cakes and raw fruit, and trash of the most unwholesome quality, as special treats and provocations to eat when its stomach rejects its ordinary diet."

By such treatment attacks are frequently induced directly; or indirectly, by producing diarrhœa and consequent debility and bloodlessness. Adherence to the rules of diet already laid down is the means to prevent this catastrophe. As to the second cause, the measures detailed for moderating the temperature of the body in fevers (Chap. XVI.) are the only pretty certain means of prevention.

Prevention.

*Intestinal Worms.*—The worms which may infest the bowels of children are of several kinds (*see* Worms).

Mode of propagation.

Thread and round worms.

As to the *thread* and *round worms*, there is little doubt that the young escape from the eggs soon after the latter are expelled from the bowel, and gain access to the human body with drinking water or uncooked vegetable food, and there they propagate themselves.

Tapeworm.

As to the *tapeworm*, its early history has been accurately observed. Each segment of the worm (being

bi-sexual) is fitted for reproduction. An impregnated segment becoming detached is expelled from the intestine. After a time it bursts and allows the escape of little embryos, each of which is provided with a boring apparatus having three pairs of hooks. These may be eaten by some animal, say a rabbit, or a pig, or an ox, with its food. Once inside the body of an animal, the embryo proceeds to lodge itself in the flesh by boring, and having selected a satisfactory home, it drops its hooks and undergoes transformation into a bladder-like form, producing the affection which we know as "measles" in the pig. When this measly flesh is eaten, the creature attaches itself to the inside of the human bowel, where the peculiar nutriment it meets with causes it to develop into a tapeworm. Many animals besides man are subject to tapeworms, and help to propagate the parasite in the above-described manner.

Prevention.

Having regard to their development and manner in which intestinal worms gain entrance, the obvious means of prevention include (1) the purity of the drinking water; (2) the thorough washing of all uncooked vegetables with a *stream* of pure water, to carry off all deposits from the surface; (3) the thorough cooking of all meat; and abstention from the flesh of the pig: (4) The daily use of salt with the diet is also found useful.

On other important points I cannot do better than utilize again the resolutions of the Medical Officers of Schools Association,* as well as the Report of the Committee appointed by the Clinical Society of London.†

* *Op. cit.*

† Supplement to Vol. XXV. of the Clinical Society's Transactions.

CHAP. XIV.

Length of quarantine.

XII.—The following quarantine times, after exposure to infection, may be considered safe *if thorough disinfection be carried out on the pupil's return to school*:—

| | | | |
|---|---|---|---|
| Diphtheria ... | ... | 7 clear days' | quarantine. |
| Scarlet fever | ... | 7 „ | „ |
| Measles ... | ... | 16 „ | „ |
| German Measles (Rötheln, or Epidemic Roseola) ... | ... | 23 „ | „ |
| Typhoid fever | ... | 14 „ | „ |
| Chicken-pox | ... | 18 „ | „ |
| Small-pox ... | ... | 18 „ | „ |
| Mumps ... | ... | 24 „ | „ |
| Whooping-cough | ... | 21 „ | „ |
| Influenza ... | ... | 6 „ | „ |

Home disinfection.

"2. Disinfection at home should not be relied on, but immediately on his return to school the pupil should be washed with carbolic acid soap (10 per cent.) from head to foot, in a hot bath; and clothes, books, and everything brought back by him should be completely disinfected.

How soon a patient may return home or to school, after having had an infectious disease.

"XXI.—With regard to that most important question, 'When may a pupil who has had an infectious disease go home, or rejoin the school?'—the following are safe rules to adopt, provided patient and clothes are *thoroughly* disinfected.

"A pupil may go home, or rejoin the school, after:—

Scarlet fever.

"Scarlet fever—in not less than six weeks from the date of the rash, *if* desquamation have completely ceased, and there be no appearance of sore throat.

"Typhoid fever—infection lasts till quite a fortnight after convalescence, but the poison may be preserved for months in clothes or other materials. A child is not fit to resume study for one or two months, according to the severity of the attack, but he may be sent home a clear fortnight after convalescence if thoroughly disinfected. Typhoid fever.

"Measles—in not less than three weeks from the date of the rash, *if* all desquamation and cough have ceased. Measles.

"German measles (Rötheln, or Epidemic Roseola)—in two to three weeks, the exact time depending upon the nature of the attack. A patient begins to be infectious two or three days before the rash appears, and continues so during the height of the disorder, after which it rapidly declines. Isolation should be imposed as soon as there is any suspicion of catarrh or malaise. German measles.

"Small-pox and Chicken-pox—when every scab has fallen off. The infection is much more intense during the height of the active stage than in the earlier part of the illness, therefore isolation should be put into force as late as the time of the appearance of the rash. Small-pox and Chicken-pox

"Mumps—in four weeks from the commencement, *if* all swellings have subsided (*see* Chap. XXXII.). Mumps.

"Whooping-cough—after six weeks from the commencement of the whooping, provided the characteristic spasmodic cough and the whooping have ceased; or earlier, *if* all cough have completely passed away. Whooping-cough.

"Diphtheria—in not less than three weeks (better say six weeks), when convalescence is completed—there being no longer any form of sore throat, or any kind of Diphtheria.

CHAP. XIV.

discharge from the throat, nose, eyes, ears, &c., and no albuminuria.

"Influenza—patient is infectious from the earliest moment till sufficiently well to return to his ordinary avocations.

Ringworm.

"Ringworm—when—the *whole* scalp having been examined in a good light, and any suspicious spot scrutinised with a lens—no broken-off stumpy hairs (which give evidence of the ringworm fungus when carefully examined under the microscope) are to be detected.

"2. It is sometimes considered that ringworm is cured when the hair commences to grow on the diseased places, but this is a mistake, for it frequently happens that diseased broken-off hairs remain; and the disease may thus exist for months or years. It is often very difficult to detect the short stumps which protrude only a sixteenth or an eighth of an inch; and it is quite useless to examine short cut-off healthy hairs from a suspicious spot, under the microscope, for the ringworm fungus."

## CHAPTER XV.

### THE EXAMINATION OF SICK CHILDREN.



Difficulties.

A YOUNG child no more understands what sickness is than that the world is round. When it first becomes ill it simply feels a strange sensation, but it is really aware of nothing. Information is only to be gained by observation, and whose observation can be so accurate as that of those who know its daily habits, and watch its every movement habitually? A strange voice, the very act of looking at it, may frighten a child greatly; while actual attempts at examination are resented in a way which very often makes investigation impossible. Before a doctor can do anything with a child he must gain its confidence, otherwise he is not likely to succeed; but in the mother the child reposes all confidence; to her he looks for protection, to her he clings when alarmed. It is the mother who is really favourably circumstanced to observe the first signs of illness.

The mother the best observer.

Firmness of the muscles and flabbiness.

A healthy child's limbs should feel firm and elastic. In acute diseases there is a sudden pause in nutrition, the first result of which is a soft condition of the muscles; rapid loss of flesh succeeding, if the disease is not checked. In chronic disorders, a loose flabbiness of the muscles, the result of diminished nutrition, is observed to come on gradually, and to be succeeded by slowly progressive emaciation.

Cold hands and feet.

Habitual coldness of the extremities (hands and feet) shows an unnatural feebleness of circulation.

CHAP. XV.

Nervous excitability increased in the healthy and depressed in the sickly child.

It has before been shown that the nervous excitability of infancy and childhood is great. In a healthy child, who suffers from an acute febrile disorder, this excitability is still further heightened; and hence we have an unusual liability to convulsions. But a child who has been reduced by mal-nutrition or otherwise, loses to a great extent its normal nervous excitability, so that illness creeps upon it almost unobserved, the symptoms being obscured by a sort of apathy of the system.

The demeanour and expression.

The general *demeanour and the expression* of face will frequently give the first signal of indisposition. A flushed or very pale face, a disinclination to play, unusual crossness, and a disposition to loll about, are signs which bespeak illness. When there is abdominal pain or inflammation, a child will lie upon its back with its knees drawn up; and the under lip is then very often drawn in. The contracted brow, with pulling at the ears, tells us that there is headache. A general restlessness, with periods of prostration, a drawing in of the thumbs upon the palms of the hands, and a tendency to frequent startings, would induce us to apprehend the approach of a convulsion. Squinting, should it come on while the child appears to be generally out of health, should always be seriously regarded. The expression of a child suffering from bronchitis or inflammation of the lungs can scarcely be mistaken by those who have any experience,—the dusky colour, the quick breathing, the parted lips and dilated nostril. A child will frequently grasp at a sick part, as, for example, at its throat in croup. Lividity of the lips and around the eyes indicates imperfect aëration of the blood; but a faintly darkish tint of the eyelids and around the mouth

indicates nothing more than a weak circulation, or perhaps only a bad digestion in a weakly child.

The *fontanelle* is the opening which exists between the bones of the head of an infant. When in any illness the skin over this opening is felt to be depressed or saucer-shaped, we may be sure that the child is suffering from severe exhaustion, and that it stands in need of stimulants and supporting nourishment. On the other hand, should the fontanelle bulge upwards, and be felt to throb with force, there is probably congestion of the brain, and then we use purgatives, cold to the head, and baths. The fontanelle—condition of.

The *cry* of a healthy child—loud, broad, and vigorous—cannot be mistaken; the repeated shrill, piercing shriek of the child in whose head mischief is working is quite characteristic. The long, low whine of irritation which accompanies deeply-seated inflammation, and which no tenderness or care can subdue, is equally well known. A vigorous fit of normal crying, which petting will not overcome, is usually occasioned by flatulence or pains in the stomach. An infant sheds no tears till it has reached 3 or 4 months of age; but once the secretion has been established, their disappearance during crying in illness is a sign of some seriousness of import. On the other hand, their reappearance, after temporary cessation, is a sign of commencing recovery. Earache is very common in infants, and is a frequent cause of persistent shrill crying. The cry. Tears.

A perfectly tranquil *sleep* is natural to infancy; unquiet sleep, with tossing about, hurried respiration, and waking in a fright, probably caused by dreams, indicates feverishness; while sudden startings and grinding of the teeth will occur if the nervous suscep- Sleep.

CHAP. XV.

tibilities are being worked upon. Heavy sleep is sometimes a normal sleep, and should be left undisturbed, unless, indeed, any popular "soothing" medicine has been administered, when the condition is not to be ignored (*see* Opiates).

Bowels.

The *bowels* of an infant should be moved two, three, or, it may be, four times a day. During the first couple of days of life the evacuations are of a black colour; but henceforth they should be of a bright yellow, and thin in consistency, till the time when other food than milk is given, when they should become darker and firmer. A green colour of the motions indicates irritation of the bowels; which, if neglected, will pass into diarrhœa. Mucus or slime with the stool indicates greater irritation, and when there are streaks of blood intermingled with the slime, we may be sure we have an actual inflammation to deal with. Sudden and copious watery purging indicates the absorption of malaria or a chill as a cause, and congestion as a result—a symptom which calls for active measures. White constipated motions point to acidity, by which the milk has become too densely curdled within the intestine, and the condition is one which calls for a change of diet. Soft putty-like white evacuations indicate liver derangement, with non-passage of bile. Great or unnatural fetor of the motions argues indigestion, the digesting fluids not acting properly upon the contents of the intestine, but permitting decomposition before its proper time. Bloody motions accompanying fever are always indicative of an anxious state.

Abdomen.

Puffiness and tenderness of *the abdomen* show that gas is being formed by decomposition within the

intestines, and that there is a state of great irritation, bordering on inflammation; while a flaccid, retracted belly shows emptiness of the intestines and the absence of inflammation. Marked pain on pressure just above the right groin shows that irritation is passing upwards; and when there is, with it, chronic diarrhœa or dysentery, it is an anxious sign. If the "abdominal breathing" be increased, that is, if the child seems to breathe chiefly or almost wholly with its belly, attention should be at once directed to the chest, which the muscles of the belly are probably endeavouring to relieve. If the belly be wholly motionless, and the chest acting with unusual vigour, very probably there is some inflammatory complication of the abdomen. An unnaturally enlarged belly may be simply due to flatulence; sometimes it is occasioned by enlargement of spleen; but it always indicates something wrong, even though it be merely the result of bad feeding. It should not, however, be forgotten that the abdomen of a young child is naturally prominent.

Urine.

The *urine* of an infant when fever is impending is often copious and clear, but when there is actual feverishness the urine is scanty and passed with unusual frequency, and it stains the napkins of a reddish colour. When there are worms the urine is often quite milky in appearance. The quantity of urine voided by a child is much more affected by heat and cold than is the case with the adult. Derangements of the liver affect the urine and urination often in a very marked manner (*see* Chap. XLIII.).

Vomiting.

*Vomiting* in an infant at the breast may be simply a mechanical act, indicating that too much food has

CHAP. XV.

been taken. Improper food may occasion a sudden attack of vomiting with diarrhœa (p. 97); so may an approaching attack of ague, but then the symptom soon subsides. *Persistent* vomiting is always a symptom of importance. "In children especially, the existence of obstinate vomiting is indicative of head rather than of stomach disease" (Reynolds). The preliminary nausea, the foul tongue, abdominal griping, and obstinate retching being signs of gastric vomiting, and the contrary holding good of head vomiting, serve to distinguish the one kind from the other. Besides these signs, if it be the stomach that is irritated, there is pretty sure to be diarrhœa; but if the head be the cause, there is usually constipation. Vomiting, therefore, is generally either a very trivial or a very important symptom.

Pulse.

From the *pulse* of a young infant, the amateur is not likely to obtain much information. Even the physician seldom troubles to count it except during sleep because the slightest excitement has a great effect upon its frequency; but the *nature* of the pulse is an important guide to those who have experience. I will not here attempt to describe a series of nice distinctions, because such cannot be taught by words; but it is not difficult to judge whether the beat is comparatively stronger or weaker than it was on the day before. It may be mentioned, lest the parent should be startled by its frequency, that the pulse at birth ranges from about 130 to 140 per minute; and to the end of the first year is from 115 to 120, while even at two or three years of age it will be 100 or more, when the health is perfect. One thing may be said—that a very slow pulse is unnatural to childhood. "While the circulation is rapid, the skin, from its softness and vascularity, disperses

heat rapidly; the cooling agencies are at a maximum; and the heat-maintaining powers (that is, resistance to depressing influences) are at a minimum" (R. Southey).

Respirations.

The *respirations* bear a definite proportion to the pulse, because the rate at which the blood is driven through the lungs of course regulates the quantity of air which is essential to yield it a sufficiency of oxygen—a certain quantity of blood requiring a certain quantity of air. The pulse beats about three and a half times for each respiration, of which there are 40 per minute in the sucking infant, but there are not so many (by some 8 or 10) during sleep. A marked change in the ratio is of importance; for instance, if there were only 2 beats to each respiration of a sick child, we should suspect a coming pneumonia. The breathing should be smooth and regular. By carefully listening to it while a child is sleeping, much information may often be gained. If it be possible to apply the ear to the naked chest, the full, deep, clear sounds of inspiration and expiration should be very plainly heard both before and behind, from the collar-bone and top of shoulder-blades to the lower edge of the ribs. Sometimes fat, full-blooded children breathe heavily, or with a sort of grunting sound, which can hardly be mistaken for diseased action, but it is as well to bear the fact in mind.

Indicative of mischief.

When the breath is drawn in with some difficulty and with a shrill sound, there is evidently narrowing of the entrance; and if, at the same time, there is a peculiar broken bell-like sound in the cough, probably there is some form of inflammation of the throat. When the lung is inflamed there is quick inspiration, the lips are kept apart, and the child is very restless,

CHAP. XV.

thirsty, and feverish. In bronchitis the respiration is more or less difficult, sometimes not greatly so, and there is a great deal of "wheezing," which will be heard as a crackling or gurgling sound when the ear is applied to the chest. The breathing may be simply quick from fever; but if rapid and accompanied by movement of the nostrils, there is usually bronchitis or inflammation of the lungs.

Collapse of lung.

Unequal movement of the two sides of the chest—that is, if one side remain motionless while the other expands fully—generally indicates something seriously wrong.

Palpation.

By placing the open hand gently but firmly against the side of the chest, a rattling may often be *felt*, in cases of bronchitis. But if, after a good cough, a rattling which previously existed, disappear, the cause was only a temporary accumulation of mucus. If, however, it remain after coughing, and continue equally marked as before, it is a sign that a good deal of mischief exists.

Tongue.

In health the *tongue* is clean and the *breath* sweet. A whitish tongue indicates derangement of some sort, such as approaching fevers, indigestion, &c. A dark brown condition of the tongue is present in inflammations and severe fevers; when, in addition to this latter condition, there is dryness of the organ, we may be pretty sure there is serious illness. A very red, flesh-coloured, raw-looking tongue indicates gastric or intestinal irritation. The tongue is itself liable to inflammation without any other diseased condition being present; but then, its swollen state, ruddiness, and the absence of other symptoms will serve for recognition.

Breath.

Foul breath may have its origin in a simple dis-

ordered stomach or fever. Sometimes, with comparative health, the breath remains foul; but there must be something more or less wrong while anything offensive can be detected.

Mouth.

Within the *mouth,* on the sides of the cheeks or lips, the irregular little white patches called "thrush" may occur. An inflamed patch, with an ash-coloured centre on the inside of the cheek, occurring in exceedingly debilitated children, or during a long and prostrating illness, is an alarming sign, for which medical aid should be sought without delay (*see* Mouth, inflammation of).

Skin.

The *skin* in the hot weather should always feel moist and cool. A hot dry skin, after exposure to great heat, should always be regarded as illness, and should be treated as such without delay (*see* p. 188). A dull, clay-coloured skin often accompanies the sudden accession of illnesses, such as acute diarrhœas and agues. A wax-like skin, with transparency of the ears, tells of bloodlessness; and a yellow skin, of jaundice. A flush over the cheekbones on a pallid background, bespeaks hectic or wasting fever.

Bodily temperature.

The *temperature* of the body is a matter of great moment for assisting in the recognition of illness. Particularly is this so in the hands of the unskilled in disease, for here we have a matter of fact, free from all the errors into which mere opinion, judgment, and anxiety are apt to lead, by which we can often determine the import of other symptoms; and, after a few observations, ascertain whether the case is one of mere indisposition, or whether the patient is suffering from actual disease, long before we could ordinarily guess without such assistance. No estimate of the heat of the body can

CHAP. XV.

As judged by hand, fallacious.

be made by the hand ; indeed, the most erroneous impressions may easily be conveyed to it. In the thermometer alone have we the means of ascertaining the temperature with accuracy.

Thermometer necessary.

The ordinary thermometer is useless for the purpose.

Kind and description of instrument.

A clinical thermometer such as is here represented should be in the possession of every one who has the care of children. The instrument is made wholly of glass, upon which the graduations are cut. Between each set of figures there are five degrees (written 5°), each of the longer lines representing 1°, and between each of these latter are five spaces, which therefore show fifths of a degree. It will be observed that the thermometer is narrowed towards its lower end, and that the minute central tube at this point becomes so fine as to be barely discernible. The object of this is to prevent the portion of mercury (A) which is detached in the tube from descending into the bulb (B) ; an accident which would spoil the instrument as a self-registering thermometer. In the diagram the detached portion is observed to register $96\frac{2}{5}°$.

How to read it.

If the bulb be grasped in the hand, the mercury will be seen to ascend the tube rapidly till it apparently strikes against the detached

portion, which will ascend too, till the highest temperature of the part in contact with the bulb is marked. Now, if the hand be removed from the bulb, the lower part of the column of mercury will rapidly descend towards the bulb; but the detached portion will remain stationary, marking the highest temperature which has been attained; hence the instrument is called "self-registering," and the detached portion is called the "index." These instruments are now made so that the glass over the column of mercury magnifies it. In ordering one, ask for a self-registering clinical thermometer with a magnifying index.

To set it.

To set the thermometer for use again, it is merely necessary to grasp it by the upper end, between the forefinger and thumb, and swing the arm sharply around; by which motion the detached portion is jerked somewhere below the figure 95.

To use it.

To use the thermometer: the patient should have been in bed for at least half an hour. One arm should be removed from the sleeve of the night-dress, and all clothes kept away from the arm-pit. This should be done quickly and without exposure of the surface to the draught of a punkah or other cold. It is very necessary that this precaution should be taken, lest the registration of a temperature below that of health, should cause the parent to imagine that something terribly wrong had occurred; or the thermometer might, under such circumstances, record health when fever is actually present; or at least a lower temperature than it would indicate if fairly treated. The bulb of the thermometer is now to be placed deep in middle of the arm-pit, and the arm itself drawn firmly across the front of the patient's chest. This position,

Caution as t placing it.

CHAP. XV.

with the thermometer firmly fixed, should be maintained for at least ten minutes. The thermometer may then be removed and taken to a good light, where it may be read. In doing this, the observer should be careful not to allow the bulb to come into contact with his own hand, nor should he read off the temperature in the direct rays of the sun. In older children it is more convenient to place the bulb in the mouth under the tongue, the lips being kept firmly closed the while. Three or four minutes will then suffice for an observation. In very young infants, the easiest and most reliable plan is to pass the bulb into the rectum.

Caution as to reading.

A clinical thermometer is a delicate instrument, and should never be employed to ascertain the temperature of a bath or do any such like work, which will be sure to spoil it.

Information given by the thermometer.

Now as to the general information we can derive from the thermometer:—

(1) In the first place, the temperature of a child's body when in health is about 99 degrees; one or two subdivisions more or less will not signify.

(2) Again, the temperature in health always reads a little lower in the mornings than in the evenings.

(3) A rise above 100 degrees is a sure sign of some kind of indisposition, which is deserving attention; and if the rise is persistent (*i.e.*, if it continue beyond 12 or 24 hours), we may be certain that an illness is coming on.

(4) If the temperature rise steadily at each observation (as compared with the figure obtained at the same hour on the previous day), we may be quite certain that the illness is gaining ground; similarly, a daily decline

indicates approaching convalescence. Should it go on increasing daily, till at the end of a week it has attained 104° or more, there is cause for anxiety. Still increasing, there is danger.

(5) A temperature much lower (97°) than the natural heat is seldom found, unless towards the end of some exhausting illness; and it indicates the necessity for artificial warmth, stimulation, and food.

(6) A very suddenly high temperature occurring in a child indicates either an attack of ague, or that there has been exposure to the sun. Unless precautions are taken, convulsions are then imminent. A *sudden* rise from the healthy standard is not of the same seriousness as a gradual increase up to a similar point, except in so far as the liability to convulsions is concerned.

(7) After an illness, though a child may apparently have recovered, he has really not done so until the temperature has become not only natural, but has remained so for several days.

(8) When, in the course of a fever or illness, the evening temperature becomes lower than that of the morning, it is a favourable sign.

(9) It should be known that a very slight cause will suffice to elevate a child's temperature. Dr. H. B. Donkin remarks that "the temperature of young children is very frequently raised some degrees, not only on admission to hospital but on visiting days, the chart in many instances giving a fairly accurate record of these occasions. Fits of crying, moreover, convulsions, or other excitements are often accompanied by a marked rise of temperature."

# PART III.

## The Child in Sickness.

### *DIVISION I.—ON FEVERS.*

## CHAPTER XVI.

### ON FEVER GENERALLY.

ITS NATURE, TREATMENT, AND CLASSIFICATION.

CHAP. XVI.

General definition.

THE term "fever" is a perfectly well understood one, implying a series of symptoms—heat of skin, thirst, a quick pulse, a flushed face, and scanty urine.

May be of local origin.

But a state of fever may arise as a mere symptom of a local ailment, such as the existence of a boil, the ingestion of improper food, &c. In these cases the febrile state is only a constitutional manifestation of a local complaint, and as such does not now engage our attention. At present we are discussing general fever as a state in itself.

Commencement of all fevers the same.

Almost all fevers commence in the same manner, without at first any well-marked distinguishing characters. It would only be attempting an impracticable refinement to endeavour to indicate, point-blank, early differences which would serve for the recognition of each kind. It is quite true that there are in India some fevers which are capable of almost immediate detection by the aid of the thermometer and their peculiar

symptoms; and of such we shall speak presently. But in the majority of instances we only see before us a patient suffering from a state of fever, whose course we must carefully observe for a couple of days or so, before we find ourselves in a position to pronounce definitely as to its nature. This being so, it becomes very essential that we should have some clearly-defined principles of action upon which to proceed to meet the emergency, with the best chances of leading it to a favourable issue, whatever its exact nature may ultimately prove to be.

Nature and effects of fever.

Before we can act intelligently or usefully, we must have some sort of a correct idea of what we are dealing with, how it affects the system, what are the dangers arising out of it, and how these may be best obviated.

What is fever?

A process of combustion.

Fever is an unnatural but veritable burning up of the body, the constituents of which are, through too rapid combustion, wasting away at an undue rate, while at the same time the assimilation of nutriment is so very slight as to be far from compensating for the loss thus endured. Thus results prostration, and an immense quantity of worn-out material is thrown upon the liver, spleen, and other organs, which their diminished powers are not able to dispose of, and their functions therefore become impaired. In this way arises further deterioration of the blood, of which all these organs are perfecters and purifiers. From mal-nutrition the brain and spinal cord become disturbed; they no longer are able to exercise complete control over the whole body. When the galvanic battery is out of order, the telegraph wires are of very little use. Hence the frequency of convulsions and other nervous affections during the fevers of children, whose nervous sensibility is so much proportion-

Nutrition becomes affected.

Hence nervous disturbance and muscular waste.

CHAP. XVI.

ately in excess of that of the adult. Without entering into the theory (which is here unnecessary) of the febrile state, such, in general terms, are the salient points to be kept in remembrance by those upon whom the treatment of a fever case devolves. Whatever be the cause of a fever, whatever be the nature of the poison which initiated it, or whether there be a poison or not, the above statement of the case holds equally good; and this is fortunate, for it gives us distinct indications as to the dangers incurred and the measures we should adopt to meet the emergency and guide it to a proper termination.

Necessity for understanding this.

Treatment.

The objects of *treatment*, then, should be as follows:—

1. Reduce heat.

Dangers of excessive heat two-fold.

1. *To reduce the excessive heat of the body.*—From such heat there are two dangers: firstly, that which may be called the immediate danger, the effect of heat as heat, by which the temperature of the brain and spinal cord may be so raised that they will no longer act naturally, the result being convulsions or complete paralysis (that is, death). Then there is the secondary or remote danger of enormous waste, which may eventually proceed past the powers of bodily endurance.

It is perfectly apparent that if we can but reduce the fire, the stove will not become red-hot, and less fuel will be consumed. So, if we can lessen the bodily heat, we remove or lessen both these perils, the first of which is to be apprehended when the temperature suddenly rises to 104° or over it, or when there are twitchings of the muscles and the other "warnings" enumerated elsewhere under the head of "Convulsions;" and the second is always present during the course of prolonged fevers.

The cold bath.

When we have indications of the advent of the serious effects of direct heat, the most prompt attention and energetic measures are demanded. By far the most efficient means for counteracting this danger is the use of *the cold bath*, which should be fearlessly resorted to in such cases.

When to be used.

Whenever the temperature rises in the course of an illness to 104°, or whenever nervous symptoms threaten during a high fever, it is an imperative duty to resort to the cold bath, which should be administered as follows:—In all cases of *pressing emergency*, the water should be as cold as it is possible to procure it, the bath should be deep, the child should be immersed in the water up to its neck, and there detained for a period of about ten minutes. Should the emergency not be so great, the temperature of the water may be raised to a heat ten to twenty degrees less than that of the child's body, as measured by a thermometer, a blanket or sheet being spread over the bath, so that the water be invisible to the patient, who may then without shock and without fright be gently lowered into the bath upon the sheet. But the surface of the water should always remain uncovered to hasten cooling, and with the same object the water may be agitated, provided this do not frighten the child.

Administration of.

Graduated bath.

Effects of the cold bath

The effects of the bath so administered are invariable. After a few minutes the face will brighten up, the nervous twitchings subside, very constantly a motion is voided in the water, and after a short time the child, who before was but semi-conscious, will play with pieces of wood or toys which have been thrown upon the surface of the water. Whilst seated in the bath, food may be administered, and that which before

CHAP. XVI.

was persistently and petulantly refused will now be freely partaken of.

After ten or fifteen minutes, or upon the occurrence of shivering, the child should be removed from the water, placed lying upon a sheet spread to receive it, and gently dried without rubbing; perfect drying is neither necessary nor desirable. Then, covered by a single sheet, it is to be laid upon the bed, when it will usually fall into a quiet slumber, such as has been unknown to it since it became ill.

Treatment on removal.

Further treatment.

After a few hours—perhaps 4, 6, 8, or 10—the heat may possibly again rise to a threatening point. What is to be done? Repeat the bath without hesitation in precisely the same manner as before. A repetition, even several times within the twenty-four hours, is quite admissible and often very necessary. If the patient has borne the bath well, it will be desirable to prolong its duration to fifteen or twenty minutes. This may safely be done, and the effect will be of longer duration.

When not to use the cold bath.

Severe bowel hæmorrhage, or great puffiness of the abdomen combined with an exceedingly feeble pulse, are the only contra-indications to this use of the cold bath.

Prejudice against the bath.

I have entered thus fully into these details, because I know from experience that I am treading upon prejudiced ground in urging this advice. Popular objections to the proceeding seem to be—firstly, because of its comparative novelty; secondly, because of its apparent cruelty; and thirdly, because native opinion (and the ayah has a powerful voice, which she does not, in her ignorance, scruple to use on the distracted parent) is so vehement against either cold water or fresh air in cases of this sort. As to the first objection, it is no novelty, but a well-established remedial agent; as to the second, let the effects answer

for themselves. The cruelty really lies in denying the means of relief; and as to the third, it is simply to be ignored. In practice I have found it almost useless to give directions. I almost invariably have had to do the thing myself in the first instance. When mere directions are trusted to, it will be found that some excuse for non-performance is often urged, or a mere pretence was gone through with the object of justifying a prevarication to the conscience and to the doctor.*

Antifebrin.

A very valuable and safe medicine, called *antifebrin*, has been discovered, and in it we have an efficient and safe means of reducing fever heat. Having employed the drug extensively in India and England, the tolerable certainty of its result has caused gratification. The safe dose for a child of five years is two grains; for an infant, begin with half a grain; one grain is the dose for a child of 1½ to 3 years. The medicine may be repeated should the temperature again rise to such a height as to cause uneasiness; but it is not to be given in a routine manner—every two hours or such like—it is to be used only upon an occasion when events demand it (*see also* Part IV.,

* Prof. Whitla (Dict. of Treatment, 1892), speaking of typhoid fever, says: "Taking all the different reports from favourable and unfavourable reporters, one is safe in saying that the *routine* employment of the cold bath has diminished the mortality at least 50 per cent." Again, Sir William Broadbent writes (Quain's Dict., 1894): "Of special measures for the reduction of febrile heat when this is becoming dangerous, either from its intensity or duration, the first to be mentioned is the cool or cold bath. This should be resorted to in all cases of hyperpyrexia, from whatever cause; its efficacy, first established in the high temperature of acute rheumatism and enteric fever, has been proved also in cases of septic hyperpyrexia after ovariotomy, and even in injuries to the brain. Here the water may be positively cold. When the bath is used to control temperature, not dangerous from its height, but from its duration, as in enteric fever, the temperature need not be lower than 70° or 65° F."

CHAP. XVI. DIAPHORETICS). The dose may be increased if found desirable, that is, if the first dose has been well borne, but has failed to produce the full effect sought. Antifebrin is almost tasteless, and it causes no depression when thus cautiously used.

The bath and antifebrin combined. In the bath and antifebrin we have formidable weapons for encountering the heat of fever. In a case of great emergency it is justifiable to employ both at the same time, and after the desired result has been attained, a lowered temperature may be perpetuated by the cautious repetition of the drug alone, or otherwise.

Sponging the surface. *Sponging* the surface of the body with water or vinegar and water (one part to three) is another means of reducing the temperature, but it is not sufficiently efficient to be relied upon in an emergency. In the treatment of prolonged fevers it is, however, of value as a means of soothing the system and keeping waste in check. Sponging may sometimes with advantage be employed to keep in check the rising temperature which is often observed a few hours after the bath has been used. The objections to sponging in the case of young children are, that it is annoying, and prevents that perfect repose which is so desirable. As compared with the bath, it abstracts heat in a very minor degree, wherefore it should never be regarded as a substitute. As a means of soothing and conveying comfort it is valuable, but no further.

The wet pack. *The wet pack* is more to be relied upon, and will produce free perspiration often when lesser measures have failed. A large towel wrung out of luke-warm water is to be wrapped round the patient, and this is to be covered with a blanket, in which the patient is to be carefully rolled and tucked in. At first there will be

a sense of chilliness, but reaction quickly sets in. Ten minutes will be sufficiently long for the pack to be continued. Then the patient is to be rubbed dry and returned to bed. CHAP. XVI.

*Drinking freely of cold water*, and sucking ice when procurable, are accessory means which should never be neglected. Cold drinks.

The local application of *cold to the head* is a measure of value, and one which may be used in conjunction with others. It undoubtedly has a great effect, when properly used, in allaying nervous excitability and relieving head symptoms; but as a cooler of the body generally, it must not be expected to accomplsih much. The thickly-folded wet cloth, which is so commonly applied, is really a source of additional heat, for it soon becomes warm, and then acts like a poultice. A single piece of wetted muslin, which will permit of free evaporation, should be used, and an evaporating lotion employed (Nos. 13, 35); or, better still, an india-rubber ice-cap or bag (obtainable from the chemist) filled with broken ice. Cold to the head.

Ice should not be retained continuously in contact with an infant's or very young child's head. The bag containing it should be moved about the scalp gently, and thus it may be applied for five minutes or so, when it should be removed for an interval before repetition. Except in this intermittent manner, it is too powerful a remedy. Wrongly used it might depress the nervous system too much. Caution.

There are certain medicines which have a cooling effect, and which are used merely as adjuncts as symptoms dictate (No. 60, *et seq.*). Refrigerants

CHAP. XVI.

Oil frictions.

Another valuable but comparatively minor means of cooling the body is by using oil frictions. It is a proceeding, the value of which the natives well know. Frequently, after a child has been removed from the bath, or after the interval of sleep which follows the bath, a gentle rubbing of the whole body with warmed oil will be attended with happy result; or when the temperature is only moderately high—from 100° to 102°—the proceeding will be found to convey comfort and relief. The skin will become soft, the irritability of the patient will subside, and there will be a tendency to perspiration, sleep frequently ensuing. If the patient has not had a bath, the potency of this remedy will be enhanced by a previous sponging of the surface.

Regulation of the bed-clothing.

While the body of a fever patient is dry and burning hot, it is a mistake to heap on bed-clothing in the hope of inducing perspiration. From what has been already said it will be understood that to do so is only to court all the dangers of excessive heat. The accession of perspiration will not be hastened. When perspiration commences naturally about the roots of the hair, on the forehead, and at the bends of the joints, some additional clothing may be drawn over the patient; to be further increased in proportion to the increase of perspiration.

2. Rest.

2. The second point of great importance in the management of a fever is *rest*, and in the case of children it is doubly essential. We have seen that fever is a great destroyer of the body substance, and we know that exercise is also a destroyer, wherefore it is plain that without rest the patient is not having a fair chance. By rest is meant the most perfect

tranquillity of both body and mind. Every movement represents a certain expenditure, and so does every worrying thought. Without tranquillity, a fever may be unduly prolonged; or convulsions, with all their attendant dangers, induced; or serious exhaustion may be brought on at a critical period. Rest represents nourishment indirectly, in that through its instrumentality a certain quantity of body substance which would otherwise be expended is conserved for future use.

To attain tranquillity with greater certainty, it is often advisable to employ certain medicines, notably chloral, the bromide of potassium, sulphonal (*see* Sedatives), and opium (*see* Opiates).

3. Ventilation.

3. The thorough *ventilation* of the apartment occupied is especially necessary, because (*a*) it keeps the body cooler; because (*b*) the disordered blood being less capable of absorbing oxygen from the air, the freest and purest supply is necessary; because (*c*) the chances of infection are thus lessened; and because (*d*) a limited ventilation is proved to increase fever mortality.

4. To meet the exhaustion.

4. *To restore exhausted nature.* To endeavour to supply, to an extent compatible with vitality, the deficiency caused by the excessive bodily waste, is a point second to none in the management and treatment of a prolonged fever. To do this we must chiefly rely upon the judicious administration of food. Nothing can be of greater consequence than that every possible particle of strength be retained by the patient. Under no circumstances should the parent risk a low diet. Let the food be as simple as you like, but, except under explicit medical guidance, never in any case of fever pursue a lowering plan. You know

Immense importance of feeding.

CHAP. XVI.

not how long the time the child may have to battle for life. You know not but that a single day's carelessness or mistaken action on your part may withdraw that small amount of reserved strength which, subsequently being found wanting, may turn the scale unfavourably.

Medicines may materially assist our efforts, but they can never, even in ever so small a degree, supplant food and good nursing.

5. Purify the blood.

5. We endeavour to ensure the speedy *removal of all improper materials from the blood*—whether they be the products of the undue waste or of the nature of a fever poison—by the administration of medicines which will preserve or establish the action of the skin, the bowels, the kidneys, the liver, &c., as perfectly as possible. Hence we use moderate aperients, fever mixtures, diuretics, &c.

Purgatives.

I would here insert this caution—never employ very strong purgatives during a fever without a very good reason for doing so. Never lightly resort to them; the fever poison may co-operate with the medicine and establish a too violent or even a dangerous flux.

6. Stimulants.

6. *Stimulants* are often necessary in the treatment of prolonged fevers; but there are two kinds of stimulants, of vastly different natures, the one from the other. There is the medicinal stimulant and the alcoholic stimulant. The former (as examples, take camphor, ether, and ammonia) are simple pure stimulants in the ordinary sense of the term, and are often admissible at an early stage of a fever when there are signs of depression. They are comparatively harmless. The alcoholic stimulants (wine and brandy)

Medicinal and alcoholic.

are, as a rule, only useful after the fever has passed away and the body is left exhausted; or towards the end of a prolonged fever, when we observe "typhoid symptoms" —viz., a dry, dark brown tongue, great prostration, trembling of the hands, and perhaps diarrhœa. Under such circumstances, the use of alcohol is not only justifiable, but it is usually essential. How far it is to be continued must depend upon the effects which it produces within half an hour or an hour after administration. A firmer pulse, ability to take more food, the relief of headache, a tendency to sleep, fall of temperature, clearer intellect, and greater tranquillity of the nervous system, are signs which indicate that it is producing benefit and ought to be continued (*see* "Alcohol").

When to use alcohol.

7. We endeavour to *relieve distressing symptoms*, such as (*a*) headache by the application of cold, in the form of a lotion or the douche; or hot fomentations succeeded by sudden cold—a method which often succeeds. Sometimes headache calls for an ammonia draught, sometimes for more potent medicines. (*b*) Vomiting is relieved by sucking ice, by adding lime water to the food, by changes of food, by poulticing the stomach with mustard and flour, and by the use of some medicines (62, 7). (*c*) Diarrhœa is a symptom which should always be seriously regarded; in fact, it should never be allowed to continue during a fever. For its treatment the reader is referred to another page. (*d*) Delirium at the beginning of a fever is usually an indication of excessive heat, but at the end of a prolonged fever it signifies want of nourishment, and perhaps even of alcoholic stimulation. (*e*) Sleeplessness is a symptom

7. Relief of distressing symptoms.

CHAP. XVI.

encountered by the administration of the warm bath, by oil frictions, and by sulphonal, chloral, and bromide of potassium (8, 9) as medicine.

8. Special poison.

8. When the nature of a fever has been recognised, we endeavour to *neutralise its special poison* and to meet its peculiarities by the various means which will be described further on.

What to do.

When a case of fever arises, *the first thing to be done* is to act upon the principles above laid down; and the next is to observe carefully the course pursued by the fever as indicated by the thermometer (p. 168) and the general symptoms. By these means we discover the nature of the fever,—whether it be—

Classification. 1. Continued.

1. Continued—that is, whether it pursues a continuously even course, without interruption or marked daily abatement. Of this kind are—Simple continued fever; ardent fever; and typhoid fever.

2. Interrupted.

2. Remitting or intermitting—that is, the symptoms almost or completely ceasing for an interval daily. Of this kind are the malarial fevers, which are termed remittent and intermittent.

Remission and intermission.

By the expression "remission" is meant a marked daily diminution of the fever, which, however, is never wholly absent. By "intermission" is meant a complete abatement of the heat between the attacks.

3. Eruptive.

3. Eruptive; of which the child is liable to the following in India:—Measles; scarlatina; small-pox; chicken-pox; and dengue.

Each of these is treated of under its proper heading (*see* Index).

## CHAPTER XVII.

### I. THE CONTINUED FEVERS.

#### (1) SIMPLE CONTINUED FEVER.



Definition.

THIS is an affection which runs a short course of from twenty-four hours to two or three days, seldom longer. There is no intermission or remission from beginning to end. Its name implies its nature—it is both simple and continued.

Causes.

Causes.—Improper food, exposure to the sun, chills during vicissitudes of weather, and the irritation of teething when stimulated by one of the other causes.

Nature.

A state of nervous derangement is initiated without the accession of any poison. When the exciting cause is removed, and the system, aided by remedies, has had time to recover from the shock, the fever abates and vanishes. This form of fever is very common in England among teething children. It is in no way infectious.

Symptoms.

There is usually preceding lassitude, and possibly some chilliness, with headache, and pains in the limbs. There is thirst, and the urine is almost always high-coloured. Soon afterwards, usually the same day, the fever comes on, and the heat may be detected by the hand, though the thermometer will have shown it earlier than this. The temperature rises quickly to

CHAP. XVII.

102°, 103°, or even 104°, but, with the exception of the possibility of convulsions, this forebodes no special danger (p. 169 [6]). The high temperature seldom lasts for more than a single day. It then gradually subsides, and the natural heat is resumed on the second or third day. With the subsidence of the fever there is a feeble perspiration. Not infrequently, when the fever has disappeared, an eruption may be observed on some part of the body, but this is of no importance, further than as a notification that the indisposition has come to an end. The peculiarities of this kind of fever are—the suddenness with which the temperature rises, the brief duration of the high fever, the regularity with which it subsides, and the shortness of the whole illness, if properly managed.

Peculiarities.

Frequency.

It is very common about the time of teething, but may occur at all periods of childhood. Seldom dangerous, unless mismanaged.

Distinguished.

Distinguished from chicken-pox by the absence of the eruption; from measles, by the absence of cold in the head and cough; from scarlatina, by the absence of sore throat; from small-pox, by the absence of severe vomiting and pains, and of the eruption. The temperature rises more suddenly than in typhoid fever. From the commencement of remittent fever it is not easily distinguished, though twenty-four or thirty-six hours' observation will usually suffice to mark the difference.

Treatment.

Treatment.—The child should be put to bed in a cool and slightly darkened room, and covered only with a light shawl, unless it complains of chilliness, when a blanket may be used till the sensation has passed away, but it should not be employed longer

(p. 178). If a full meal have been recently partaken of, an emetic of ipecacuanha, 3 to 5 grains with a sufficiency of sweetened water, should be given. The state of the bowels should then be attended to—a dose of castor oil (48), or Gregory's powder (50), or of senna (52) will usually be sufficient, unless there be actual constipation, when a stronger medicine (53, 56) may be used with advantage; but excessive purgation should be avoided (p. 180); cooling drinks (60, 62, 63) may with advantage be freely allowed. As the distress increases antifebrin (p. 175), sponging the surface with lukewarm water, or vinegar and water (1 part to 4), should be employed, and resort had to the cold bath (p. 173) should necessity arise. The diet should be exceedingly simple, consisting of thin arrowroot or diluted milk, for the first day. Afterwards chicken broth should be added to this, and other simple articles of nutriment given as opportunity offers. A prolonged starvation system should never be risked. An hour having elapsed from the time the purgative was administered, a fever mixture (36, 38) should be commenced, and given every second hour. Under this treatment the fever will usually begin to subside in from twelve to twenty-four hours. The first sign of abatement will be the appearance of a little moisture about the roots of the hair. At this moment, or an hour later, it is a good plan to administer a dose of quinine ($2\frac{1}{2}$ grains to a child a year old, and 5 grains if two years old), for two reasons,—because it possesses the power of reducing febrile heat generally, and because the fever may be of a malarial type, and may therefore at this stage be cut short by quinine. While there is delirium, a very foul tongue and constipation, or a tendency to

Signs of amendment.

Use of quinine.

CHAP. XVII.

convulsions, great depression or torpor, quinine had better be withheld for the time, till these conditions subside. With the appearance of perspiration the bed covering should be increased in quantity, the additions being made as the bodily heat decreases, and the perspiration increases. If the child be old enough, a draught of warm tea (not strong) may advantageously be allowed during the progress of the perspiration.

Management of restlessness.

A cold lotion (13) may be applied to the child's head throughout, provided it do not cause annoyance. Should it happen that a restless, wakeful night is to be apprehended, a tepid bath at bedtime, followed by an oil inunction (p. 177), will be found to exercise a very soothing influence; or it may be desirable to supplement these measures with a dose of sulphonal (*see* Index).

## CHAPTER XVIII.

### THE CONTINUED FEVERS.

#### (2) ARDENT FEVER.



What is meant by the expression.

ARDENT fever is a name which in England has been used synonymously with that of the simple continued fever just described. It may be that the latter is but a minor degree of the former, but it is a condition so serious and so frequent in India, that for practical purposes it is deserving of separation and special consideration. Convulsions, heat-apoplexy, or some form of paralysis may result from it, if it be not properly managed.

Dangers of.

Symptoms.

When, at the hot season of the year, a child is attacked with a sudden and violent fever, the temperature running up to 105°, 106°, 107°, or even higher, such a fever is an ardent fever, for the time being at all events. It may be that it will subside in due course as a simple fever does, or it may even be that it will eventually prove to be a violent intermittent or remittent fever;* but it cannot be a typhoid attack, nor yet one of the eruptive class. Let it be what it

* At the risk of being charged with elevating a symptom into a disease, as is perhaps here done, the definition is adhered to as being eminently practical for non-professional persons.

CHAP. XVIII.

may, the practical point is that we have to deal with an ardent fever for the time being; and if with the above suddenness and temperature we do not find twitchings of the muscles, lethargy, or excessive irritability, with or without dilated pupils, and possibly a tendency to delirium, the case will be an exception to the rule.

In such a case it should be clearly understood that the child's life is in danger while the high temperature lasts, or until it be accompanied by profuse perspiration, which, however much it may appertain to the nature of the disease, will require some time for its appearance.

Delay is dangerous.

A judicious parent will not wait for the appearance of symptoms, nor will he wait for what are called "warnings." Let the sudden accession of such an amount of heat suffice for all warnings.

Treatment.

For the very serious state of matters we are now considering there is one efficient remedy, namely, cold water. I need not here repeat that which has been fully explained at page 173 as to the mode of employing this efficient and certain remedy. No drug is to be compared with it for rapidity and certainty combined; indeed, in the case of a violent ardent fever there is not time allowed for the action of drugs, so emergent are all the surroundings of the case.

The cold bath having been *efficiently* administered, the next thing to be done is to give a dose of antifebrin (p. 175); or, in its absence, quinine ($2\frac{1}{2}$ grains to a child of a year, and 5 grains to a child of two) during the first interval of cessation which results, or immediately after the sleep which succeeds the bath. Especially is it necessary to do this when exposure to

the sun has been the active cause of the derangement, but it is better to avoid quinine while there is torpor or a tendency to convulsions.

Favourable results of treatment.

A genuine case of sun-fever so treated, before actual injury has been sustained by the brain, will seldom be a cause of anxiety beyond a few hours. But should the treatment have been too long delayed, although probably death may be averted, yet the risk of paralysis from brain or spinal injury through heat is incurred.

After management.

During the progress of recovery the points demanding scrupulous attention are—(*a*) the most absolute tranquillity in a darkened room; (*b*) the free opening of the bowels by means of an enema in the first instance (44, 45), and then the administration of a purgative (53, 56); (*c*) surrounding the patient with a cool atmosphere, which should be kept in active motion with the punkah; (*d*) the most simple diet; and (*e*) if there is sleeplessness and unusual crossness, after recovery from immediate danger, the administration of a dose of chloral (8), or sulphonal, and afterwards for a few days bromide of potassium (9).

# CHAPTER XIX.

## THE CONTINUED FEVERS.

### (3) TYPHOID OR ENTERIC FEVER.

CHAP. XIX.

Other names.

THE typhoid fever of children is the same thing as the infantile remittent fever of England. It is also termed gastric or enteric fever.

Definition.

It is a continued fever, of two or three weeks' duration (in children the duration is very variable), accompanied by a peculiar scanty eruption, which occurs in crops from the eighth to the twelfth days of the fever, and by great prostration and generally more or less diarrhœa. The force of the fever poison expends itself upon the small intestines, which in severe cases undergo ulceration, a condition which is not so uniformly met with as in the adult, though inflammation and swelling at the characteristic places are invariable. The disease having once occurred, conveys protection from a second attack.

Causes and prevention.

The causes and prevention of this affection have been discussed at p. 148. Let it be remembered that typhoid fever is a *preventible* affection.

Frequency.

According to statistics the disease is rare among European children in India—indeed, it is not frequent amongst the native races. Even in England it is extremely rare before two years of age, and unusual before five. About six per cent. of typhoid patients are under ten years of age (Murchison).

CHAP. XIX.

Before the actual symptoms commence, a period varying from one to two weeks elapses after the imbibition of the poison.

Symptoms.

The disease may run either a mild or a severe course, and "the differences are so great between its milder and severer form as to warrant our adopting them as a ground for its subdivision into two classes" (West).

Of milder form.

A case of the *milder variety* will run such a course as the following:—The child becomes listless and disinclined to play. He is drowsy, desires to lie down, and his nights are restless. The skin may now feel dry, but hardly hot, yet the thermometer will show a temperature of 100° or so. On the second day the dryness and heat increase. The thermometer will register a steady daily rise. The urine now becomes high-coloured and scanty, the breath is apt to become offensive, and the back part of the tongue is observed to be thickly furred, while its end is unusually red and bright. Nearly always the bowels are too loose, the motions being of a light yellow ochre colour, and smelling very offensively. The respirations are rapid, and there is frequently a short hacking cough. The temperature rises steadily till the maximum is attained, usually about the fifth or sixth day, when even 104° may be reached. There is a constant gurgling of the bowels; particularly is this noticeable after food has been taken; and not infrequently there is some pain on pressure over the lower part of the abdomen near the right groin, and also sometimes over the spleen. Sometimes, and at irregular intervals, a perspiration may appear on the surface, but it soon passes off and brings no relief. Unless the case is very mild,

CHAP. XIX.

the tongue, before white, now becomes brown, and the looseness of the bowels increases. The muscular wasting is considerable.

Commencement of recovery.

All the symptoms continue with more or less force till the end of the second week, when the morning temperature (which is usually in sickness, as it always is in health, a little below that of the evening) will be found to have fallen as much perhaps as a couple of degrees. A rather sudden evening rise may be expected, but it will not attain the height of the previous evening.

Termination of the illness.

Thus is initiated the commencement of convalescence, and at the same time the general symptoms begin to abate. But the disease may still continue till the end of the third week, by which time convalescence will in most cases have been fairly established. Great prostration and emaciation are left.

The eruption

In defining the disease, an "eruption" has been mentioned; but no stress has been laid upon it as a sign, because, although when it does occur it is absolutely distinctive of the fever, it is often very difficult to discover it, and it is frequently altogether absent in children. It consists of a "few small, very slightly elevated rose-coloured spots, disappearing on pressure, each spot continuing visible for three or four days only" (Aitken). Generally they occur in crops, which appear and gradually disappear, to be replaced by others, and are to be looked for about the abdomen, chest, and back, between the eighth and twelfth days of the fever.

The severer form.

The *severer variety* of typhoid fever sets in with greater violence. There is drowsiness, vomiting, and

sometimes a short shivering fit. The temperature may go up to 105° or 106° on the fourth or fifth day, giving rise to much brain disturbance. The tongue becomes dry, the belly distended and tender on pressure. The diarrhœa is more severe, and the emaciation more rapid. It is often difficult to arouse the child from its lethargic condition. As the disease progresses the teeth and lips become covered with a black dry incrustation. Notwithstanding the greatest care, the prostration is sure to be excessive by the time the crisis has arrived (at the end of the second or third week). Fortunately convulsions are not nearly so frequent when a high temperature is attained by a gradual process, as happens in this disease or in the course of any lengthened fever, as when excessive heat supervenes suddenly. Recovery from a severe enteric fever is always an exceedingly gradual process.

Distinguished.

This disease, after the lapse of a few days, is readily distinguished by its symptoms. Commencing in the same way as most other fevers, an immediate recognition is often not possible; but there are special characters of its own which will serve to distinguish it, viz., the preceding languor and drowsiness, the steadily and slowly rising temperature, the abdominal distention, the diarrhœa, the great prostration, and the rash if discovered. From the eruptive fevers it may be distinguished in the same manner as mentioned at page 184 when talking of simple fever.

Prospects.

Enteric fever usually runs a mild course in childhood, and the majority of cases which are properly nursed recover satisfactorily. The following may be regarded as being signs of good omen:—A mild

CHAP. XIX.

Favourable and unfavourable signs.

commencement, but little diarrhœa, absence of abdominal tenderness on pressure, a morning temperature not exceeding 101° to 102°, an evening temperature not exceeding 103½°, and a moist tongue; and during the third week a morning temperature 3° less than that of the evening, which latter should gradually decline. If the opposite conditions prevail, there is cause for anxiety; and if there is bleeding from the bowel or deep stupor, the case is extremely grave.

Treatment.

Those who wish to treat typhoid fever successfully will do well to peruse the chapter on "Fever," and to act upon the general principles there laid down. The state of the patient so frequently varies, that if there are not guiding principles (which are understood) at command, little good is likely to be done by meddling.

Nursing.

But in addition there are points connected with the treatment of typhoid fever which demand special consideration. The first, and by far the most important, is the nursing. Nothing that a doctor may do or say will avail without good nursing. The life of the patient *always* depends upon the manner in which this office is performed. The nurse must be sufficiently intelligent to have some idea of the enormous waste of body material which is going on, and that at the same time the bowels are in a state of excessive irritation, if not of actual ulceration. While, therefore, it is of the greatest importance to introduce nourishment, we must be most careful to avoid irritating the bowels. Over-distention of the stomach, whether with food or fluid, should never be permitted.

Importance of.

Diet.

Small quantities given frequently is the rule to observe, the great necessity for supporting the vital

powers being ever kept in mind. Milk diluted with barley water or thin arrowroot constitutes the best form of food. We should be in no hurry to commence chicken or mutton broth, or other form of animal food than milk. When exhaustion is great soup may be given as an excellent stimulant once or twice in the day, but it should never be wholly or chiefly trusted to. If the bowels are not very irritable a small quantity of a light cornflour pudding may be cautiously given twice a day, but the existence of much diarrhœa will prohibit this as well as broth. Every two hours at least, except that the child should never be waked from a sound sleep, simple food must be given in small quantities, in the face of all objections on its part, and irrespectively of the trouble it will certainly entail to the nurse. Peptonised milk may prove of great value after the first week or ten days, especially if curd appear in the stools, a condition which will be accompanied with flatulence, restlessness and increased fever; or the addition of soda water or gelatine may be made to the milk. When there is exhaustion sufficient to render the administration of food difficult, it is a good plan to employ at intervals an injection of a small wineglassful of peptonised milk (*see* Receipts), to which may be added a teaspoonful of essence of meat. Of course such an enema is to be retained, an object which is easily effected by pressure with a folded towel for a few minutes after the pipe has been withdrawn. Cold water may be liberally allowed, but in small quantities at a time. Barley water will allay the thirst more effectually. Tamarind water should never be given, on account of its purgative properties.

CHAP. XIX.

Nutrient enema.

CHAP. XIX.

Ventilation and disinfection.

The ventilation of the room should be thorough; all evacuations from the bowels should be received on napkins or folded sheets, and such soiled linen should be immediately plunged into disinfecting fluid and removed from the house. Heavy bed-coverings are to be avoided, the room should be kept still, and every effort made to encourage sleep and tranquillity.

Bed sores.

The child's back and buttocks should be daily examined for any red or angry-looking patches, indicating the threatening of bed sores, which should be guarded against by the use of soft pillows or air cushions; and by painting the inflamed parts with white of egg beaten up with spirits of wine.

Sleep.

To secure sleep, the warm bath (98°) and subsequently anointing the body with oil, will be found very useful. Medicines, as will be explained, may also be needed for this purpose.

Stimulants.

Towards the end of the second week it will frequently be desirable to employ wine or brandy, in quantities proportionate to age; a teaspoonful of the latter three or four times a day with four or five times its bulk of water, may be required by a child three or four years old. But should the symptoms become very severe, with great exhaustion, clammy perspiration, prostration, and diarrhœa, the quantity of spirits should be considerably increased, according to the effect produced (*see* p. 180). Tea, as a preventer of waste, may be given in moderation if the child will take it. When there is much exhaustion the food should not be given altogether cold (p. 69).

Rest.

The child should be spared every possible exertion. Night and day his every want should be instantly

attended to. As far as possible, all his whims should be humoured. The nervousness consequent upon excitement is quite capable of greatly aggravating the symptoms.

Medical remedies.

Throughout the whole course of this affection no opening medicine of any kind should be given. With a very moderate diarrhœa we need not interfere, because if we lock up the unnatural excretion it will readily decompose in the intestine, and produce further irritation or inflammation. On the other hand, we should never, if we can prevent it, allow anything like sharp or constant purging. The number of the motions will, to some extent, guide us; two or three in the twenty-four hours may be permitted, but their nature is a surer pilot. A very watery purging should be checked by astringents and aromatics (29). Scanty slimy motions will seldom benefit by the administration of astringents, but an occasional enema of tepid water will greatly relieve the condition. Aromatics (7) will prove useful by relieving flatulency and distention; but chiefly to a careful diet must we trust to regulate the bowels generally. Poulticing the abdomen often proves very beneficial under these latter circumstances. Should the symptom (diarrhœa) persist, the addition of a drop or two of laudanum (*see* enemata) to one of the injections, which should be small with the intention of its being retained for a time, may judiciously be made.

Avoid purgatives.

Check diarrhœa.

Should there be bleeding from the bowel, the utmost quietness must be observed; the patient should never be moved or raised into the erect position, and prescription No. 31 should given in conjunction with No. 30 till the symptom has ceased.

Bleeding from bowel.

CHAP. XIX.

Spongings. Cold or tepid spongings of the surface frequently followed by oil inunctions, will be of essential service by reducing the temperature and imparting a sense of comfort.

Fomentations. Distention of the abdomen and pain on pressure should always be treated by fomentations and light poulticing.

Fever mixture. At the outset of the disease a fever mixture (38) may with advantage be given, but it need not be continued long, and only used subsequently during periods when the heat is high.

Stimulants. When depression sets in, after the tenth or twelfth day, a stimulant mixture (64, 65) will be found very useful in conjunction with wine or brandy as previously described (*see* Alcohol). But alcohol may be necessary before this period if there be tremor of the limbs and a weak pulse. It should, however, be omitted as soon as these subside lest it produce depression, reserving it for future necessity.

Delirium met by sedatives. Delirium and inability to sleep, if not overcome by the spongings and inunctions, will frequently yield to a dose of sulphonal, chloral (*see* Sedatives), or opium (a single drop of laudanum for every year of age completed. *Never more* in twenty-four hours).

Great caution as to food after recovery. As the fever subsides, the stimulants and nutriment ought to be increased, but very cautiously. Solid food should not be allowed for a week or ten days after all active symptoms have disappeared. Meat is not to be ventured upon for at least six weeks after complete recovery.

During convalescence, quinine in tonic doses (66) will be found useful. Chest attacks are not infrequent

after typhoid fever, unless precautions against cold be taken.

Disinfection.

From beginning to end of the disease the measures for disinfection and the precautions laid down at pp. 138 and 154 should be carried out.

Relapses.

Relapse is common in typhoid fever, usually occurring about ten days after recovery from the primary attack, and more than one relapse may happen.

The reader has been already referred to the chapter on "Fever" for the principles which should guide him in treating this disease, and those remarks are now supplemented for the sake of impressing the mind more forcibly by the following words of Sir William Broadbent:—"The great source of danger in typhoid fever is the prolonged high temperature . . . . to keep down; therefore, the febrile heat of the body is to diminish very greatly the danger attending this disease." He then points out that the *continued* administration of drugs of the antifebrin class is "usually disastrous," and that "the most trustworthy means of controlling the temperature is cold bathing." He adds:—

Sir Wm. Broadbent quoted.

"Without going so far as to say that the cold bath should be employed in all cases, the writer is of opinion that many lives would be saved were cold-bathing at once put in practice whenever a temperature of 103·5° or 104°F. in the first few days show that the attack is of more than average severity; and it is of the greatest importance that this should be done early, so that the pyrexia may never get the upper hand, and that the intestinal lesions may, if such a thing is possible, be modified. And no patient should be deprived of the chance which is afforded by the bath when at any stage of the disease life is threatened by hyperpyrexia or by consequences of high temperature such as violent excitement, sleeplessness, restlessness, or nervous prostration."

## CHAPTER XX.

### II.—FEVERS IN WHICH THERE IS A CESSATION OF THE HEAT, TEMPORARILY.

#### (1) REMITTENT FEVER.

CHAP. XX.

Causes.

THIS illness is caused by absorption of the malarial poison (p. 142). Chills may act as exciting causes of attacks in those who have been previously exposed to malarial influences. It would seem that in smouldering cases the usual outlet (the perspiration) being cut off by cold, a sufficiency of the poison is accumulated to develop an attack; but a sufficient dose may be imbibed to produce the fever *per se*.

Symptoms.

Suddenness and violence usually characterise the commencement of this form of fever. There is very little warning of its approach—at least, not such as the child is able to appreciate. Pains in the limbs, loins, and head are, however, not infrequent, and vomiting is a pretty constant symptom. Sometimes there is a violent attack of copious watery diarrhœa. A shivering fit is very seldom noticed, though the hands and feet may be felt to be cold. In a few hours the body is burning hot. There may be drowsiness, or a tendency to convulsions. The high temperature will probably remain for eight, ten, or twelve hours, when a perceptible diminution of the fever will be observed—perhaps by 3 or 4 degrees—though it will not com-

pletely disappear. The decline is generally accompanied with some amount of perspiration; but this is not always so, and it usually occurs in the morning. Early in the afternoon a rise again commences, abatement setting in early in the night. The length of the remission (p. 182) and the period of the day at which it occurs are variable. Generally, however, there are six or eight hours of abatement, and the time of relief includes the morning and forenoon. When the paroxysm is at its height there is a good deal of restlessness, possibly delirium, and convulsions if precautions be not taken. Thirst is always great, the tongue is coated, the breath foul, and the respiration extremely rapid. The paroxysms, as described, repeat themselves until checked by treatment.

Favourable and unfavourable signs.

A very high temperature, a dry brown tongue, much delirium and trembling of the hands, are anxious signs. Improvement may be either gradual or sudden. If the former, it will be ushered in by increased length of the remissions, and diminished height of the thermometer-reading during the hot stage, while at the same time a general sense of relief is experienced, and the nervous symptoms become less conspicuous.

Low type.

Remittent fever sometimes assumes a low type; so much so, that without the aid of the thermometer it might not be known that there is any fever present.

Duration.

This form of fever observes no definite duration. Upon treatment chiefly will depend the length of the illness.

Prospects.

The prospects of the case are usually favourable, but it is a common and a serious affection.

Distinguished.

Remittent fever is distinguished from typhoid fever

CHAP. XX.

by the suddenness with which it comes on, by the absence of persistent diarrhœa, abdominal symtoms, and rash, and by its very marked remissions. From simple continued fever it is known by the markedness of its remissions. From the eruptive fevers by the distinctions noted on p. 184.

Treatment.

Nervous disturbance is to be apprehended very early in this complaint. Our first indication, therefore, is to guard against the effects of over-heating, in the manner described at pp. 172—177. If natural purging has not already occurred, the bowels should be freely opened (Nos. 52, 53, 56). Shortly after the aperient, a fever mixture (38 or 36) should be begun and given every hour. The bed-clothing should be light, and the ventilation of the room perfect. The utmost simplicity as regards diet should be observed. Much benefit will be derived from the use of the tepid bath at night as a sedative, and cold may be applied to the head if it prove grateful.

Preliminary management.

At the commencement of the fever.

Quinine. Proper time for administration

With the first well-developed signs of remission, the bed-covering may be increased, and a full dose of quinine (No. 67) administered. By the first signs of remission, I mean when moisture is felt upon the forehead, and when the temperature has declined about 2° from the highest point it had reached. The fever mixture may now be omitted.

Not infrequently these means will cure the fever in its first stage, but more usually a second paroxysm occurs, though probably it will be of less intensity. Without treatment, the second paroxysm is as a rule more severe than the first.

When not to give quinine.

Quinine should not be given while the temperature

is rising. During decline, and when there is some perspiration, no matter how slight, is the proper time; but it is a mistake to wait till the fever has altogether disappeared before resorting to quinine; and it is an almost equally great mistake to employ it in only small doses; but as before remarked (p. 186) it is safer to withhold the drug while there is torpor and a tendency to convulsions. Then we must first reduce the heat of the body, and thus restore the nervous equilibrium, as a preparation for the quinine. CHAP. XX.

At no period is the strength to be allowed to decline. Here we have no abdominal complications as in the fever (typhoid) last described, so we are in a position to administer food as liberally as we can prevail upon the patient to take it. Of course solid meat, and other articles difficult of digestion, should not be given, even if the patient could be induced to eat them. Food.

Should what are called "typhoid symptoms" * (dry brown tongue, hard dry lips, great prostration, and black incrustrations upon the teeth) supervene, as they sometimes will when the fever has persisted for several days, stimulants should be used in the shape of wine or brandy, and a stimulant mixture (64, 65) prescribed. Then, too, egg-flip and beef-tea should be given frequently. When to give stimulants.

As a rule, there is only opportunity for a single dose of quinine daily, during the severity of the attack. If, therefore, a fully sufficient dose is not administered, clearly we cannot hope for benefit from the drug. But

* A general term applicable to this series of symptoms occurring in the course of any disease. The expression should not convey an impression that these are exclusively symptoms of typhoid fever. (See p. 180.)

CHAP. XX.

as the fever declines, the interval of remission lengthens, —then we had better divide the dose, giving the medicine twice a day, half the original quantity each time. Even after the complete cessation of the fever it is right to continue quinine as a single half-dose daily for at least a week or ten days. It may then be omitted, and chiretta (69) substituted for it.

How often to give quinine.

After treatment.

If, after the sickness, debility persist, and the patient remain pale and worn, quinine and steel (68), or the syrup of iodide of iron (71), may with great advantage be used, and persisted in for a month or six weeks.

## CHAPTER XXI.

### FEVERS IN WHICH THERE IS A CESSATION OF THE HEAT, TEMPORARILY.

#### (2) INTERMITTENT FEVER, OR AGUE.



Causes. Symptoms.

THE causes are the same as those of remittent fever. There is a cold, a hot, and a sweating stage; succeeding the latter there is a complete intermission of the heat and of all the symptoms.

Peculiarities of—in the child.

The younger the child, the less the regularity observed by the symptoms. Frequently there is an absence of anything like shivering,—indeed, it is unusual, unless the child be over three or four years of age. Occasionally, but rarely, the attack subsides without sweating. The stages generally are of shorter duration than in the case of the adult, and sometimes even two paroxysms occur in the twenty-four hours. The hot stage is, however, always well marked.

Course of an attack.

The premonitory symptoms are very slight, often not sufficient to attract any attention. The child does not actually seem ill, but he yawns, refuses food, and lolls about. In most cases it will be observed that an attack is preceded by an unusually copious flow of urine, but after the fever has become established the urine is red and scanty. The ague fit begins with a feeling of cold; the skin becomes pale, shrivelled, and rough ("goose-skin"). The finger nails may be of a bluish

CHAP. XXI.

colour. The skin feels cold, though the thermometer will even now show an unnatural rise of temperature, and the internal organs are congested from the blood being driven in. Shivering may ensue, but it is rare in young children. This stage may last from a quarter of an hour to two or three hours, and then succeeds the hot stage. A couple of hours after the fever has commenced, the temperature may rise to 104°, 105°, 106°, or even more, and the hot stage lasts from two to four hours. The decline down to the natural standard, or even a little below it, is equally rapid; according to the amount of perspiration, so will be the rate of cooling.

Intermittent fever, when untreated, usually observes periodicity; returning every day at the same hour, every other day, or every third day. When recurring daily, the cold stage is short and the hot stage long; and when every third day, the opposite holds good.

Distinguished.

When a child, who immediately before was in its usual health, is observed to refuse its food, to yawn, to loll about, and yet not to complain of feeling actually ill; if at the same time the hands are felt to be cold while the thermometer shows the bodily heat to be greater than natural—we may be pretty sure an attack of ague is coming on. The extreme suddenness of the attack without any warning symptoms is sufficient to distinguish it.

Prospects.

An attack of ague is not in itself usually dangerous; but it should never be disregarded, because it is an indication that the child has come under the pernicious influence of the climate, by which much constitutional injury may eventually be effected. Indirectly, the effects of ague cause an immense amount of mischief

to children in India; indeed, the remote results are really much more fatal numerically than cholera, but because an attack is not immediately dangerous, such cases are ignored.

Treatment.

While the child complains of feeling cold, let it be well wrapped up; a bottle of hot water rolled in flannel may be put to its feet, and some warm tea given. If the bowels be confined, a dose of castor oil (48) or Gregory's powder (50) had better be administered. When the heat of the body begins to cause inconvenience, the bed clothing should be removed, and great attention devoted to the effects upon the nervous system, the means for reducing temperature (p. 172 *et seq.*) being put into practice as necessity demands. As to food and nursing, the rules recommended for the management of remittent fever are to be observed. From the commencement of the hot stage, the fever mixture (38 or 36) should be given every hour till the perspiration has been freely established. Now is the time for quinine. It is important that this particular period be seized upon for the administration of the medicine in a full dose (67).

During the cold and hot stages.

Time to give quinine.

Mistakes as to quinine.

The old rule of waiting till an hour or so before the next attack is due, is an extremely bad one. The quinine then increases the irritability and nervousness, while it produces very little effect upon the disease. Nor is it well to withhold the drug till the normal temperature has been reached.

As to clothing.

There need be no hurry in changing the clothes which have been wetted with perspiration. To do so prematurely risks chill and suspends further action of the skin.

CHAP. XXI.

Repeat the quinine.

About six hours after the first dose the quinine should be repeated. The chances are that the attack will not return, if, in the meantime, the child has been kept warm.

Management after cure.

A repetition of the attack is to be treated in the same way as above, and after complete cessation, the quinine should be continued in diminishing doses twice a day for ten days or a fortnight. The greatest care must be taken to avoid chill.

After effects.

THE SUBSEQUENT EFFECTS OF MALARIAL FEVERS.—

Tendency of the public to regard country fevers too lightly.

Because these fevers are not attended with immediately serious consequences, they frequently meet with but little attention. Attack succeeds attack, at more or less long intervals. Each is "cured," and no more is thought of it till the next occurs, when it meets with a similar amount of consideration. In the meanwhile the changes which are at work are not observed, because they are so gradual in their outward manifestations. They are slow, it is true, but they are very certain.

Constitutional effects.

Almost every organ of the body is involved. Internal congestions are the earliest mischief. The spleen often becomes more or less enlarged. Inter-current attacks of diarrhœa and dysentery are not infrequent. The child becomes pale and flabbly. Possibly dropsy or jaundice may occur. The quality of the blood suffers in a most marked manner. It becomes watery, and contains but feebly vitalising qualities. In short, a persistently deleterious influence everywhere pervades the body, resulting in steadily advancing deterioration of the health, of which bloodlessness is the chief visible sign.

Seriousness.

Up to a certain point, this condition is quite capable

of remedy; but beyond that point, remedies are of no avail; a stage of blood destruction may be reached which cannot be passed with hopes of recovery. Many such patients die, and their deaths are attributed to "diarrhœa," "debility," "atrophy," or whatever condition most attracted the attention towards the end.

Information from the temperature.

Throughout the whole course of the obscure illness which often succeeds repeated agues, or which, even sometimes without ague, indicates the malarial state, the thermometer should be regularly used. It will usually be found that the evening temperature rises to some point over 100°, it may be to 101°, but seldom more. So long as this is the case we may be sure evil influences are at work. In the stage of recovery there usually occur intervals of a few days without a high temperature, which, however, may again recur and persist for other periods of some days, the intervals becoming longer, till there ceases to be any elevation. If after a fair trial of remedies the temperature persist without alteration, we may be certain the illness is gaining upon us.

Treatment.

The treatment of this state of malarial saturation is very important and very simple. It may be summed up in a few words: milk, quinine, arsenic, iron, warmth of body, non-exposure, and, if need be, change of climate.

Milk diet.

It is most important that in these cases the diet should consist largely of milk. It is a remedy which here possesses great value, and one without which the child is not having a fair chance. An attempt should be made to induce a child of four or five years of age to consume a seer of milk daily.

CHAP. XXI.

Quinine.

Quinine should be employed in full doses (67) twice daily, so long as any signs of active fever remain. As soon as these are overcome the quantity may be reduced, and it should subsequently be given in combination with iron (68) for about three months. Should this prescription seem to irritate the bowels, the syrup of iodide of iron (71) may be substituted; but in such a case, quinine must still be given in the intervals between the doses, twice a day. When the febrile state has wholly ceased, a prolonged course of arsenic and iron (3) is often more useful than quinine and iron. Diarrhœa should always be at once checked (29).

Iron.

Diarrhœa.

Exercise and sleep.

Moderate exercise during safe hours of the day is essential. Fatigue should never be incurred. Plenty of sleep should be indulged in, and if the child feel so inclined, he may be permitted to spend his mornings in bed. The exhaustion which the early morning walk is apt to induce proves hurtful in these circumstances; besides which, the cold of the morning air, if perceptible, will be injurious.

Change of climate.

If after a fair trial, of say a month, the febrile state remain constant, the case ought to be removed from the locality—to sea, if possible; if not, to the hills. From a mere change from one district to another but little good need be expected, though it sometimes is useful when it is of a radical kind—such as from the damp of an eastern Bengal district to a healthy place in the North-Western Provinces.

Of all conditions of health appertaining to the climate of India, this kind of chronic illness is *the* one calling for removal from the country to Europe.

## CHAPTER XXII.

### III.—THE ERUPTIVE FEVERS.

#### (1) MEASLES.



Definition.

THIS is an infectious continued fever, accompanied by a copious characteristic eruption. Infection, according to Squire, begins with the commencement of a case and lasts for about three weeks.

Cause.

The disease is spread only by infection from person to person, either directly or through the medium of a third person. When the skin is scaling off is the time of greatest capacity for spreading the complaint. The occurrence of this illness usually protects from a second attack. A period of from 10 to 14 days elapses from the time of exposure to infection till the disease commences (pp. 154, 155).

Symptoms.

A sense of chilliness, with headache, thirst, a foul tongue, and feverishness are the earliest signs which show themselves. At the same time the child seems to be suffering from a cold in the head; he sneezes, his eyes are watery, there is usually some cough, and the eyelids are puffy. The feverishness and general symptoms increase. On the fourth day of their continuance, the rash makes its appearance, first on the forehead and face, from which it gradually extends over the whole body. This rash is of a dull brick-red colour, consisting of innumerable small fleabite-like spots, slightly elevated above the surface.

The rash.

CHAP. XXII.

Progress. The fever, now perhaps 104°, does not diminish with the appearance of the rash; it may, indeed, increase, but the cold and cough either wholly vanish, or become greatly lessened at this period.

Duration of the rash. The rash lasts for three days before it begins to fade, and with its decline the fever and other symptoms subside gradually, till on the ninth day of the illness they have all disappeared, leaving behind only redness

Conclusion of case. and scaling of the skin. Sometimes itching of the skin is almost intolerable, either when the eruption is at its height or when the scaling commences. Occasionally the glands of the neck become greatly enlarged in the early stage of the illness, and then there is usually a good deal of sore throat—the latter being most common when the eruption is fading.

Seldom severe in India. In India, measles rarely assumes a malignant type. Should the eruption be copious and of a purple colour, should the tongue become dark and brown, the prostration great, and the chest symptoms severe, the disease has assumed a very grave form.

Bad signs. Sudden disappearance of the eruption is a sign of significance, generally indicative of bronchitis or other lung complaint. So, a continuance of the high temperature after the rash has, in due course, disappeared, is unfavourable.

Distinguished. Measles is easily distinguished from other complaints by the character of the eruption and the time of its appearance. Distinct elevated red papules appear on the fourth day, whereas the eruption of scarlatina is a uniformly diffused red blush, appearing on the second day, and the more distinct elevations of small-pox appear on the third day. Unlike small-pox, the fever

does not subside with the appearance of the eruption. The watery eyes, sneezing, cough, and swelled face are very characteristic of measles as early symptoms.

Prospects and frequency.

In India the prospects are believed to be decidedly favourable, though the affection is common enough, and figures prove that the disease in that country is not one to be ignored, a considerable fatality sometimes happening. The severest mortality occurs between one and three years of age.

Treatment.

From the earliest moment, the child should be confined to bed in a room properly ventilated but free from draughts. In the cold weather it will be advisable to light a fire in the room to preserve the temperature at about 65°. It is very important to guard against cold, but a higher temperature should be avoided, lest we add to the bodily fever-heat. The fever mixture (36) will soothe the cough and promote the action of the skin. It may be necessary to use antifebrin (p. 175). The inhalation of steam from over a jug is grateful and lessens coughing. The fever drink (63 *b*) may with advantage be allowed. Sponging the surface piecemeal with vinegar and water allays the irritation of the skin, and generally exercises a soothing influence. "The free use of cold, so speedy and potent an antipyritic in scarlet and other fevers, is not required in the early stages of measles, and would be injurious until after the eruption is out; where this is interrupted, as by debility or chill, sometimes by convulsions in the infant, the warm bath is to be used, with or without the addition of mustard" (Squire). Cold affusions may be necessary to subdue the fever at a later stage, when, if head-symptoms threaten, ice should be applied to the

CHAP. XXII.

head (p. 177). Purgatives, as a rule, are to be avoided, the bowls being apt to become irritable. From beginning to end a starvation system should be avoided, though the diet should be of a light nature.

Stimulants.

Should the severer symptoms manifest themselves, it will be necessary to resort to stimulants, both in the shape of medicines (64, 65) and wine or brandy; and the greatest attention must be given to the administration of nourishment. "There is, perhaps, no condition where wine and spirits produce such marked and immediate benefit as in the pulmonary congestion at the crisis of measles. They are sometimes the means of saving life in the after-depression till such nourishment can be taken as will soon supply the needed support" (Squire).

Chest complications.

Troublesome cough with hurried breathing should be encountered by large poultices to the chest, followed by turpentine stupes. It may also be necessary to give an emetic (39) to assist in the expulsion of phlegm. The danger of measles "depends almost exclusively upon its complications, and as in their absence there is little to excite alarm, so there is little to call for treatment" (West). Disinfection should be carried out as recommended on pages 147 and 138.

Complications.

The complications which sometimes accompany or follow measles (though less frequently in India than in England) are—(*a*) Convulsions, usually appearing at the commencement of the case, when they are not of such serious import as when they occur later. (*b*) Bronchitis and inflammation of the lungs are the most dreaded of all complications, but the climate of India is unfavourable to such develop-

ment. (*c*) Ophthalmia of a painful nature is sometimes very troublesome; but by strict attention to cleanliness, the allowance of a liberal diet with wine and tonics, and the almost hourly use of the ordinary eye lotion (23), a rapid cure will be effected. (*d*) Discharges from the ear are not very common, but when they do occur they are most troublesome. They most usually happen when the disease is disappearing, and are probably caused by cold. (*e*) Chronic congestion of the throat with a husky voice, and possibly some tendency to diphtheritic symptoms. (*f*) Without the occurrence of any one of these complications, measles sometimes produces a profound impression upon the constitution, which may not become re-established for a long time, varying from a few months to as many years. The most constant indications of this state are a pale, bloodless appearance, duskiness of the skin, flabbiness of the muscles, languor, cessation of the progress of dentition, crossness, and very disturbed nights. Such symptoms should meet with prompt attention, lest disease should insidiously and permanently affect the child's constitution. A life almost wholly in the open air, a generous diet, careful protection from cold, the allowance of wine in moderation, and the administration of cod-liver oil and iron (71) are the remedies to adopt.

Constitutional impression left behind.

Management of this state.

When a child falls into this state of health, from which he cannot very quickly recover, the temptation to send him to a colder climate may arise. It is not, however, advisable to do so, unless the heat of the place at which he is already resident be so great as

Caution as to change of climate.

CHAP. XXII.

to occasion exhaustion, and the climate which it is proposed to adopt be very moderate indeed.

German measles.

There is an affection termed *German Measles* which, however, is different altogether from and does not protect against true measles. It rarely requires any treatment, but the above rules may be followed. It

Distinction.

differs from measles, for which it may readily be mistaken, in these respects:—There is a sudden onset without previous sneezing or coughing. The temperature does not rise gradually before the rash appears, nor fall suddenly afterwards, as it does in measles. The eruption lasts only two days, commencing on the cheeks, wrists, and ankles, and each point appears distinctly separate. A mild case in which the fever subsides before the rash has disappeared is probably one of German measles (p. 155).

# CHAPTER XXIII.

## ERUPTIVE FEVERS.

### (2) SCARLATINA.

CHAP. XXIII.

Confusion of names.

SCARLATINA and scarlet fever are different names given to the same disease. The former word does not express any minor form of the affection, as is sometimes supposed.

Definition.

Scarlatina is a highly infectious continued fever, accompanied by a general red blush of the skin. The force of the disease is expended upon the throat.

Cause.

Scarlatina only arises from infection — generally directly from a sick person; but the disease may be conveyed by clothes or in milk.

Incubation.

It commences within five days after infection, but probably earlier. If more than a week elapses without symptoms, after known exposure, we may reasonably conclude that the child has escaped.

Symptoms.

The symptoms vary greatly according to the intensity of the attack. There may be a mere indisposition with the characteristic redness of the skin; or there may be a furious onset, accompanied with delirium, a scanty rash, a dry brown tongue, and violent inflammation of the throat.

An ordinary case commences with the usual symptoms of fever, accompanied with vomiting, pains

CHAP. XXIII. and brief shivering. Attention is soon called to the throat by complaints of soreness and difficulty of swallowing. The tonsils will be found to look red and angry, behind the furred tongue. Very probably one or two of the glands of the neck will enlarge and become painful.

Peculiarity of the tongue. The appearance of the tongue soon changes, the whiteness giving place to bright redness, through which will appear numerous light-coloured spots, a condition known as the "strawberry tongue."

Rash on second day. On the second day the eruption appears; first on the neck and upper part of the body, whence it extends over the whole trunk and limbs. With the manifestation of the rash the bodily heat increases, and as it progresses the throat becomes somewhat worse.

Description of rash. The rash is uniformly red, it disappears on pressure, but almost instantly returns. It lasts but a short time, reaching its height by the end of the third or beginning

Disappears on sixth day. of the fourth day of the illness, and totally disappearing on the sixth day. Simultaneously the throat soreness

Fever & local symptoms subside together. and fever disappear, and shedding of the skin (desquamation) commences, in the form of bran-like scales,

Desquamation. except from the soles of the feet and palms of the hands, where it separates in large pieces. Desquamation may last any time from eight to twenty days

The most infectious period. (Steiner), and it must be remembered that till the process is complete the patient is intensely capable of propagating the disease.

How to estimate the danger. Broadly speaking, the danger to a case may be estimated by the violence of the throat affection. Rapidly destructive ulceration of the throat is attended with very great bodily prostration, delirium, a weak pulse, a

dry fissured tongue, and a scanty eruption. The patient's condition is then very critical. CHAP. XXIII.

*However mild a course the disease may run,* it should be borne in mind that the kidneys suffer more or less in all cases, and that actual disease of these important organs may be excited by exposure to cold or errors in diet, and that this danger is at its height just as the child seems to be perfectly safe,—when all symptoms have vanished, during the third week. A dry skin, pallid complexion, a smoky colour of the urine, return of feverishness and puffiness of the face, point to affection of the kidneys (*see* Dropsy). The kidneys. Caution most required when it seems least necessary.

Scarlatina is recognised by the throat affection and the character of the eruption Measles commence as a cold in the head a couple of weeks after exposure to infection; scarlatina with sickness, high fever, and sore throat within a week. The eruption does not appear till the third or fourth day in measles; on the second day in scarlatina; and when it is seen there can be no confusion. Distinguished.

The prospects of the case will depend upon the presence or absence of those symptoms mentioned above as indicating a serious state of matters. The mildest case of scarlatina is, however, attended with some danger, more from the subsequent effects than from the disease directly. Prospects.

Happily, in India, this disease is extremely rare; indeed, till late years, it was alleged that it was wholly unknown in the country, but this is not so. It is a disease requiring cool weather for its nurture; the hot season seems to slay its vitality. In the cold season it is sometimes imported with the children of European regiments, but it disappears with the Frequency.

CHAP. XXIII. increasing heat. In England, scarlatina is, with the exception of convulsions and diarrhœa, the most fatal of all infantile affections.

Treatment. Rigid isolation for the safety of others, and the freest ventilation compatible with the absence of actual cold, both for the patient's own sake, and to obviate the chances of conveyance of the infection by or to others, are matters of primary importance. Confinement to bed for two or three weeks at least is essential in all cases. Sucking ice will relieve the thirst and throat, cool the body, and check the vomiting. Lemonade (60) or conjee water may be

Food. liberally allowed. A very simple diet of arrowroot, milk diluted with lime water, and chicken broth, to which, later on, it will be necessary to add stronger soups, should be given. "Caution is required as to meat, and even the supply of beef-tea should be limited, while milk can be given *ad libitum*, and eggs may be largely depended on" (Squire). The inhalation of steam from over a jug will be grateful to the throat. When the throat is troublesome, Waring recommends inhalation of the fumes of hot vinegar. Sponging the surface with tepid water is useful and pleasant to the patient. The worse the throat is, the more concentrated should be the nourishment; should it proceed to ulceration

Stimulants. and the tongue become dry, brandy or wine must be given in addition, but alcoholic stimulants are only to be used with great caution.

Inunctions. Dr. West speaks very highly of inunctions of suet into the whole surface twice a day, as being more effectual, and giving more permanent relief than sponging. In any case, oil or suet inunctions should be practised

during the stage of skin-scaling, daily after a tepid bath (p. 147). CHAP. XXIII.

As to *medicines*, a mild case requires very little interference. Even in a tolerably severe case it is not well to be in too great a hurry to rush to active measures. When the fever is at its commencement the fever mixture (38) should be used. Only in case of necessity is it right to give a purgative, and then it should be of the simplest nature (castor oil or Gregory's powder). Should the throat be very sore, it is a good plan to brush it with a solution of tincture of steel, glycerine and water; otherwise it will be sufficient to allow the patient to suck ice, while either a warm linseed poultice or cold compress is applied externally, and constant gargling with a saline solution (common salt, ½ ounce to one pint of water), to dissolve the mucus, is carried on. It is not advisable to use chlorate of potash in large quantities for the throat, as it tends to irritate the kidneys. As the fever declines the mixture may be discontinued, and a stimulating medicine (64) substituted for three or four days, when it, in its turn, should be replaced by quinine (66) or chiretta (69).

Medicines.

Application to throat.

Unfortunately, the troubles of scarlatina do not end with the attack. Dropsy, inflammation of the ear, abscesses of the glands of the neck, and general debility of a serious nature may succeed.

Complications.

*Dropsy*, when it occurs, appears during the period of skin-scaling, and is generally the result of cold, the child having been allowed up too soon. The vapour bath with saline purgatives, such as Epsom salts and senna, or Seidlitz powder, together with steel and quinine (70, 68), are to be employed to meet this

CHAP. XXIII. emergency, while, at the same time, the most stringent precautions against cold are taken (*see* Dropsy).

*Inflammation of the ear* is to be treated upon general principles (*see* Ear).

*Swelling and abscesses of the glands* are to be treated with fomentations and poultices till they subside, or they should be lanced by a competent person; while the best nutriment, such as beef-tea, egg-flip, milk, and so forth, must be given with no sparing hand, and quinine and steel (68) administered persistently.

As after measles, so after scarlatina, though with even greater intensity, a state of *constitutional debility* may become established, and months if not years of judicious care may be required to induce a return to perfect health.

Caution. N.B.—For a long time after recovery from scarlatina, the greatest caution must be exercised in permitting the child to go out of doors (even when the air is only cool the convalescent should be kept indoors), and in avoiding errors of diet, or in resorting to wine, lest the kidneys become affected.

The special measures previously given regarding the prevention and disinfection of this extremely contagious complaint should be attended to throughout (p. 147). A patient is infectious from the onset of the first symptoms. Isolation should therefore be commenced at the earliest moment, and continued for 7 or 8 weeks (p. 154).

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# CHAPTER XXIV.

## ERUPTIVE FEVERS.

### (3) SMALL-POX.



Cause.

THIS disease is only propagated by means of infection. It is a most virulently infectious complaint, which may be communicated by the exhalations from the body and lungs of the patient so long as any of the scabs remain adherent to the body. It may be carried from person to person by the clothing, or conveyed through bedding.

Incubation.

The germs will retain their vitality for a long period, and may live in wall paper, old clothing, &c., for months, if not for years. About twelve days elapse from the time of exposure to the infection till the symptoms make their appearance. As a rule, it attacks the same person once only.

Varieties.

There are two varieties of small-pox, termed the *distinct* and the *confluent*. In the former the pustules remain distinct the one from the other. In the latter they run together into large patches. These so-called varieties are really only differences in degree of severity, the seriousness being proportionate to the quantity of the eruption, unless complications arise.

Stages of the complaint.

The course the disease runs will be better understood by dividing it into stages as follows:—The *first* stage is that of fever, and lasts from about forty-eight to sixty hours; the *second* is that of eruption, followed by a remission of the general symptoms, and a fall of temperature until about the eighth day; and the *third*

CHAP. XXIV. is that of the secondary fever, which lasts for three or four days.

Symptoms of first stage.

First Stage.—The earliest symptoms are those which are common to other febrile disorders, but shivering is more marked than in any except ague. Vomiting and headache are usual. In elder children, pain in the back and loins is so severe as to be almost characteristic, but in those of tender years it is so slight as hardly to attract attention. The temperature runs up to 103° or 104°, the tongue is furred, and the urine thick and scanty. These symptoms continue with increasing intensity till the third day, when the eruption appears—at first on the forehead and face, then on the wrists, and subsequently upon the body and limbs.

Eruption on third day.

Symptoms of second stage.

Second Stage.—Before the eruption is plainly visible it can be detected by passing the finger over the forehead, where the rough feel of the hard papules beneath the skin may be at once recognised. With the eruption comes relief, the fever greatly subsides, and all the symptoms are mitigated. At first the rash consists only of a number of simple red elevated papules, which come up through the skin, and do not merely lie upon its surface. They are peculiarly hard, nor do they contain any fluid till they are forty-eight hours old, when a whey-like liquid makes its appearance at the top of each. The surface of each vesicle, instead of being conically distended, is centrally depressed or saucer-shaped. After the lapse of another period of forty-eight hours each pock becomes of a yellow colour, the clear fluid contents having been converted into matter. On the eighth

Fever subsides when eruption appears.

Description of eruption.

day from the commencement of the disease the rash has attained its height. During the process of ripening —that is, while the vesicles are changing from white to yellow—the skin swells more or less, so much so that the eyes may become closed, and the whole appearance be dreadfully distorted. The eruption may involve the interior of the mouth and throat sufficiently to cause the patient distress, but the amount of fever throughout this stage is not great.

Swelling of the skin.

Third Stage.—The eruption has reached maturity on the eighth day; the temperature then rises again, and the general symptoms return till the tenth or eleventh day, when the pustules either dry up or burst and scabs form. Then this "secondary fever," as it is called, begins to decline. By the fourteenth day the scabbing is completed, the temperature normal, and convalescence has set in.

Symptoms of third stage.

Secondary fever.

In CONFLUENT SMALL-POX the general symptoms and stages are as above related, but this form of the affection runs a much more violent course. The primary fever is more severe; there is much vomiting and not infrequently convulsions. The eruption comes out earlier; it matures more rapidly; it is much more profuse, and is so closely packed together as to show no intervals of sound skin between the vesicles. When the pustules break, the matter runs together, forming large brown or black scabs, which have an abominable smell. Of course such a great drain upon the constitution produces seriously depressing effects. With the secondary fever, which sets in earlier than in an ordinary case, there is liability to complications; delirium and cough being the most frequent.

Confluent small-pox.

CHAP. XXIV.

Distinctions.

Once the eruption has appeared, there of course is no longer any doubt as to the nature of the case; but in the earlier stages the distinction is not so easily made. The following points will help to elucidate the question somewhat. Vomiting as an early symptom is very constant in small-pox, and is more severe than in *measles*; the back-ache and high rise of the temperature before the rash appears do not happen in measles. There is the absence of cold in the head and cough, which are constant symptoms in measles. The measles spot is much less raised than the small-pox papule, nor is it hard and "shot-like" under the finger. From *chicken-pox*, small-pox may be known by the mild fever of the former. The rash of the former complaint comes out within twenty-four hours, and that of small-pox not for at the least forty-eight hours. The matured eruption of chicken-pox is a large white, rounded bleb, which never becomes mattery; that of small-pox is not so large, it is saucer-shaped on the surface, and its contents soon become purulent.

Prospects.

The prospects of a case depend (1) chiefly upon the fact of previous vaccination or the reverse. Even imperfect vaccination will in all probability modify the attack and render it comparatively harmless (p. 106). (2) A mild introductory fever indicates a mild attack. (3) A scanty eruption is evidence to the same effect, and the liability to complications is then small. (4) The most favourable age for an attack is between the tenth and fifteenth years (Marson), and of course (5) in a disease of such exhausting suppuration, a previously strong constitution will justify us in auguring more favourably than when a child in an opposite state of health is attacked. (6) Confluent small-pox is

always dangerous, and when occurring in the non-vaccinated it is very fatal, about 50 per cent. dying. (7) Chest complications, indicated by difficulty of breathing, cough, and hoarseness, must always cause anxiety.

From the ninth to the twelfth days are those of most danger. Convulsions are rare during small-pox. Among children of European soldiers in India small-pox is very uncommon, because of the great precautions which are taken in the matter of vaccination. As to the mortality which ensues among the unvaccinated, the reader is referred to the chapter upon vaccination.

Most dangerous period.

Frequency.

Isolation and disinfection, as described on a former page, must be rigorously carried out (pp. 138, 139, 148, 155). Ventilation and a cool surrounding atmosphere, though without cold or draughts, are matters of importance. The bed-clothing should be light; by heaping on clothes, considerable harm may be done. In this, as in all other fevers, sponging the surface has a soothing effect. There need be no dread that by doing so the eruption will be "driven in." Water may be freely allowed, as also may the fever drinks (63), or lime juice and water (60). The diet should at first consist of milk and arrowroot, gruel, bread and milk, and a little beef-tea. The vital powers must never be allowed to flag, because the exhausting stage of suppuration has yet to be encountered. Under such simple management alone most cases of distinct small-pox will proceed satisfactorily; but in the confluent variety, strong beef-tea, and milk with the yolk of egg, will have to be given from an early stage. And should signs of vital depression

Treatment.

Diet.

Never allow powers to flag.

CHAP. XXIV.

manifest themselves, it will be necessary to give wine or brandy with a liberal hand. Against the danger of great prostration, which sometimes supervenes with suddenness, "the greatest care and watchfulness are required; and if at any time the pulse becomes quicker and feebler, the surface pallid, and the pustules assume a flabby, half-empty appearance, if at the same time there be increased restlessness and delirium, then we must push our alcoholic remedies with increased vigour" (Tanner), as well as when typhoid symptoms (p. 203, note) supervene.

Stimulants.

The eyes should always be carefully looked to, lest they become damaged. Careful ablution with an eye lotion (23), and the application of simple ointment to the edges of the lids if they stick together, will generally be sufficient to effect this object.

The hair should be cut short.

Medicines.

Do not purge the patient, though by all means see that moderate action of the bowels is established by mild medicines (48, 50) at the commencement of the case. The ordinary fever mixture (38) may be given during the primary fever, but need not be continued during the second stage, when the febrile heat is moderate. In the third stage, or that of secondary fever, benefit will be obtained from a stimulant mixture (64 or 65). But prevention of irritability of the bowels then claims most attention from medicines. Prescription No. 31 will probably be found the most beneficial in such a necessity, particularly if there be, at the same time, delirium; otherwise a simple astringent such as No. 29 will answer the purpose. Dr. J. W. Moore, who is an authority on the subject, affirms that in quinine

and tincture of steel (68) we possess most valuable antiseptic medicines for small-pox.

Convalescence from small-pox is not usually a prolonged process. Once the patient has completely passed through the disease, recovery is steadily progressive; but it will be well in most cases to administer a tonic (66, 68, or 69). Convalescence.

For the prevention of pitting a great many nostrums have been proposed. Equal parts of olive oil and lime water, well shaken together into a thick emulsion, and smeared twice daily over the surface, certainly proves to some extent beneficial, as will anything that excludes the air, but the local application of turpentine or carbolic acid is much more effectual; both, however, especially the latter, are not without danger if extensively applied, in that they may be absorbed into the system, and produce untoward symptoms. If the application be restricted to the face and hands only, no such danger need be apprehended. The manner of using them is as follows:—Turpentine one part, olive oil four parts, shaken together, and applied night and morning by means of a feather; or carbolic acid twenty minims, glycerine one drachm and a half, and zinc ointment six drachms, mixed thoroughly together, is to be painted over the face and hands every second day. A very safe and good application is,—olive oil and lime water in equal parts to 7½ ounces, eucalyptus oil 4 drachms, prepared calamine powder one drachm. This application is to be put on with a camel's hair brush every three hours. Prevention of pitting.

To destroy the disagreeable odour, "sanitas" powder may be sprinkled about the room and bed.

CHAP. XXIV.

Complications.

The complications which may arise from small-pox are inflammation of the ear, boils, inflammation of the lungs, bronchitis, and ophthalmia, which, when they occur, are to be treated as if they had arisen under ordinary circumstances.

Modified small-pox.

*Modified Small-pox* is a name applied to the disease as it occurs in a person who has previously been vaccinated. In such a case the whole course of the disease is so modified as to convert it into a trivial complaint, requiring no treatment; but the important point to know is that it is as infectious, and as capable of propagating the worst kind of small-pox as the most malignant form of that disease. The proper rash comes out at the usual time but scantily, and it dries up much earlier—on the 5th to the 8th day.

As dangerous as any as to infecting powers.

*Malignant* or *black* small-pox is fortunately not often met with, as it is invariably fatal. It is characterised by a violent onset, followed by hemorrhages into the skin resembling deeply-stained bruises. The usual eruption is either very scanty or wholly absent, and the temperature is seldom very high. Malignant small-pox is never met with in vaccinated children.

## CHAPTER XXV.

### ERUPTIVE FEVERS.

#### (4) CHICKEN-POX.



Nature.

THIS is a trivial though infectious complaint, which appears some time within a fortnight after exposure to infection. The patient is infectious as soon as the rash appears, and remains so during convalescence. It is very common in India, where its attacks are by no means confined to childhood.

Symptoms.

For about twenty-four hours there is more or less fever, seldom much, and indisposition. Then the rash appears generally on the chest or back, and with it the fever almost goes away. The rash commences as a number of little red pimples, which on the second day fill with fluid. On the third day they have attained their maximum of size, and present an appearance as though the patient had been subjected to a shower of boiling water, which had left behind a number of small, almost clear blisters. On the fifth day the vesicles begin to dry up. On the eighth or ninth day the crusts thus formed commence to fall off, and the disease has come to an end, leaving the patient but little the worse for it.

Sometimes successive crops of vesicles appear every twenty-four hours, and may go on forming for ten or twelve days; but this is more common when the affection attacks the adult.

The illness usually occurs only once in the same

CHAP. XXV.

individual, most commonly during childhood; but it conveys no protection from small-pox.

Distinction.

The very slight fever, and the large rounded clear vesicles, with only watery contents, distinguish it from small-pox (p. 225).

Treatment.

Recollecting that the complaint is contagious, it is as well to isolate a child so attacked. Little or no actual treatment is necessary. The patient should be kept within doors for a few days, abstain from animal food, and take a gentle purgative once or twice.

(5) DENGUE.

Manner of commencement.

In children, this epidemic fever comes on with little warning. There may perhaps be some little malaise for a day previously. This is followed by acute pain in one or two joints, and chills and flushings for a few hours,

Symptoms.

which symptoms are succeeded by violent fever (104° to 105°) of some twenty-four hours or longer duration, the pains in the joints increasing in number and intensity all the while. The younger the child, the fewer the warnings: in a great many cases the accession of violent fever is the first symptom. The fever is accom-

First rash.

panied by a peculiar mottled red rash or efflorescence on the palms of the hands, soles of the feet, neck, and cheeks, extending to the chest and trunk, and not infrequently there is some soreness of the throat. With the total decline of the fever (on the second day of its duration) this rash disappears. For a succeeding period of about forty-eight hours the child is comparatively free from pains, and completely so from fever. There is nothing more than weakness left behind; but

Second eruption.

the affection has not yet run its course. A second eruption, which exactly resembles that of measles, now

succeeds, and with it a slight amount of fever and restlessness; all of which symptoms last for about twenty-four hours, frequently less. The after-pains, so common in the adult, seldom cause much trouble to infants and young children. Recovery is rapid, and no prolonged ill effects remain.

Distinction.

The recognition of the complaint is easy. In the first place it only occurs in epidemics, never as isolated cases. The primary eruption is like that of scarlatina, but the rarity of scarlatina in India, and the fact that the fever and eruption appear almost simultaneously, are sufficient to prevent confusion. The secondary eruption is very similar to that of measles, but the previous occurrence of another form of eruption, and the intermediate cessation of the fever, are quite sufficient distinctions.

Prospects.

The prospects are almost always favourable. The only danger is from the great and sudden heat of the first twenty-four hours, when infants are liable to convulsions. Subsequent prostration is not so common as with adults who have been attacked.

Treatment.

Dengue is an affection which, like the other eruptive fevers, must run its course. Drugs, therefore, cannot cut it short. Upon proper management, rather than medicines, we must rely. In the first instance it will be desirable to give a mild aperient (48, 50, 52, 53). During the febrile stages a fever mixture (36, 38) should be given. The important point in the case of young children is to moderate the bodily heat by means of spongings, the cold bath, antifebrin, or oil inunction, as the symptoms may demand, in the manner directed elsewhere. (*See* Index.) A quinine tonic (66) may afterwards be desirable.

## CHAPTER XXVI.

### OTHER FEVERS.

#### (*a*) RHEUMATIC FEVER.

CHAP. XXVI.

Symptoms and course.

THIS disease commences rather suddenly, with a feeling of coldness, sore throat, and flying pains in the joints; and there is thirst, feverishness, and loss of appetite. The temperature will be found 102° or 103°. Pain is experienced in some of the middle-sized joints—the knee, ankle, wrist, or elbow, for instance—and it shifts from one joint to another. All these symptoms become aggravated, and with the fever there is a copious sour-smelling perspiration. The temperature runs up to 104° or 105°, or even higher, in proportion to the severity of the joint-affection; the joints swell and become very tender to the touch. Sleep is almost impossible. Delirium is uncommon, but the face is anxious. A case may last for some weeks, but in children it runs a more rapid course than in adults. The acute symptoms may be much prolonged by neglect. Relapses are common.

In children the disease often runs a *latent* course, that is, the symptoms may be so slight as scarcely to attract attention—feverishness or "growing" pains alone are recognised, yet the case may be one of genuine rheumatic fever, with liability to all its complications.

Seriousness.

Rheumatic fever is not so serious in itself as in the after-mischief which is so frequently entailed by heart

disease, of which it is the commonest cause. The immediate prospect is favourable, but a child who has once suffered is particularly liable to a second attack; and the younger the patient the more will the joints be spared and the heart attacked.

It requires skill to detect the fact of the heart having been attacked; for usually there is neither pain, tenderness, nor other prominent symptom; but almost always the child then bears an appearance of distress which cannot be otherwise accounted for. Accompanying this disease, heart affections are more common in childhood than when rheumatic fever first appears in the adult. The joint-affection may be slight, but the heart is just as liable to attack as in severe cases. Inheritance and previous attacks conduce to liability to the disease.

Other complications.

In addition to heart affections, children who suffer from this disease are liable to subsequent attacks of tonsillitis and certain skin affections, as well as to the distressing condition known as chorea or St. Vitus's dance (Chap. XLVI.).

Treatment.

This is one of those diseases in which good nursing is invaluable. The nurse should be strong enough to lift the patient with facility; and the patient, clothed in a long flannel night-gown cut down the front and furnished with strings, should lie upon a narrow bed, well padded with blankets beneath, and he should be covered with a blanket or blankets, according to the season, without the intervention of sheets. Perfect rest and absolute confinement to bed are essential. The affected joints having been sponged with warm water, in which carbonate of soda has been liberally dissolved, should be wrapped in cotton wool

CHAP. XXVI.

and supported by pillows in comfortable positions. Small doses of opium should be given to relieve pain (*see* Opium). Now we have to endeavour to counteract the poison in the blood, which is occasioning the joint inflammations and endangering the heart. To do this we open the bowels gently, and then begin to administer the salicylate of soda in doses of ten grains every third or fourth hour (in water) to a child of five years, while stimulants are given in moderation and the dose of the salicylate lessened as soon as any depression is observed. In this way the urgency of the symptoms will soon be mitigated, but it is better in any case not to continue this drug for more than a couple or three days, as it is depressing. We may then substitute the bicarbonate of soda in similar doses. When the disease has been subdued a steel and quinine tonic (68) should be given. Pain is to be relieved by Dover's powder or laudanum in appropriate doses (p. 198). The diet should consist of milk and some farinaceous food, and not till convalescence has set in should meat be allowed, nor should there be any hurry in permitting the patient to rise from bed, the danger of a relapse during the first week being considerable.

Frequently as it happens in the adult, an extremely high degree of fever in this disease is fortunately rare with children, and when it does occur, the means for subduing bodily heat already recommended (*see* Fever) are to be put into practice without hesitation. Upon this point all authorities are agreed. The after-treatment consists in change to a dry climate and the prolonged administration of arsenic (3), cod liver oil, and iron.

(*b*) CEREBRO-SPINAL FEVER. CHAP. XXVI.

This is a fever of a very distinct type and formidable nature. Within the last few years I have met with some cases of it in practice, and therefore mention it. Its chief characteristics are the suddenness of attack, the slightness of the fever, and the expenditure of all its force upon the nervous system. There are seldom any premonitory symptoms in the child. Possibly he may have gone to bed comparatively well and then got a convulsion; or there may have been some vomiting, torpor, and complaint of pain in the back of the head and neck, previously. Insensibility or delirium rapidly succeed, the head is drawn back and is more or less stiff in that position, the pupils are contracted at first, and the limbs may after a time become more or less rigid. The breathing is sighing and irregular. When the temperature is taken it will be found to be only about 101° or 102°, if so much, but as time passes it will rise. In some cases, indeed, there is almost no fever. About the third day a blotchy eruption is often noticed on the body. The danger is that the insensibility may increase and the child pass into collapse. Symptoms.

The disease observes no special duration. A mild case may terminate favourably in one or two weeks. A severe case may end fatally very rapidly, and cases of medium severity may last from two to four weeks. The first three or four days are the most dangerous. Duration.

The cardinal points appear to me to be (1) to avoid the use of quinine, (2) to push sedatives, and (3) to nourish and stimulate from the commencement, while (4) the attention is not to be diverted from the temperature, which should be kept in check by cold baths Treatment.

CHAP. XXVI.

and the other means enumerated (p. 173), and (5) the bowels are to be relaxed from the beginning to the end.

The combination of chloral and bromide of potassium (8) is the best sedative to use. Sulphonal (*see* Index) may be tried, and if found sufficient to subdue the nervous irritation, it ought to prove valuable, as it does not depress the heart's action; but if pain be the cause of the nervous symptoms and sleeplessness, it will be necessary to rely upon opium in the first instance (*see* Opium). It is a matter of vital importance that the nervous irritation be thus completely controlled. The brandy and egg mixture (receipt 10) will form an excellent stimulant, unless the child be very young, when white wine whey may be substituted (receipt 8). A stimulating enema (45) is a good commencement of treatment, and it may even be allowable to apply diluted mustard plasters to the back of the neck and other parts of the body till reaction is initiated. Peptonised meat (receipt 9) forms an excellent food, but strong meat essences and the juice of raw meat (receipt 6) must also be employed, as well as such light and digestible articles, suitable to age, as the child can be induced to swallow. As a purgative, prescription 56 will answer. The freest ventilation, a cool atmosphere, a darkened room, and perfect quietness are other essentials of treatment.

(c) INFLUENZA

Nature and symptoms.

Is an infectious epidemic illness with an acute onset, marked febrile symptoms, and a tendency to serious complications, followed by prolonged prostration. Relapses are common. The fever usually lasts 3 or 4 days, but sometimes longer.

The peculiarities of the cases are, the suddenness of commencement with a feeling of chilliness, the great and unaccountable prostration, and the occurrence of very distinct pain somewhere, either as headache, pain in the legs, back, or abdomen. There is also a cough, which is not severe; but it is not common, as is generally supposed, to find the symptoms of cold in the head. The appetite disappears, vomiting is often present, and diarrhœa is frequently an accompaniment.

Three distinct forms are recognised, viz.—(*a*) the catarrhal, which is attended with inflammation of the eyes and a tendency to throat and lung affections; (*b*) the gastric, which sets in with sudden vomiting and diarrhœa; and (*c*) the nervous, marked by severe headache and backache and great depression.

Prospects.

Recovery nearly always takes place, and convalescence is more rapid than in adult cases.

Treatment.

Antifebrin (p. 175) is of great value in this affection, bringing relief to the fever and the pain. In addition, an ordinary fever mixture (38), and perhaps a mild aperient, are all the medicines that are required. The patient must be strictly confined to bed and given concentrated liquid nourishment. At the commencement of recovery a little wine will serve to lessen the feeling of depression. Afterwards change of air; and tonics, such as ammonia and bark (65) or quinine (66), will be found very useful. The patient should not be allowed out of bed for a couple of days after recovery. Complications are to be treated as described under the various headings (*see* Index). As to prevention see pages 154 and 155.

## CHAPTER XXVII.

### THRUSH.

CHAP. XXVII. THRUSH is one of those affections of early infancy (rare after the third month, except during the first dentition) which ought never to occur, and which will not occur in a well-managed infant. It is a disease of mismanagement, which is characterised by little white patches within the mouth. In itself it is a trivial complaint, though it is indicative of a depraved state of the digestive organs, unfavourable to assimilation.

Definition.

Causes and nature.

The chief cause of thrush is an unsuitable diet, which, producing a disordered state of the system, originates an unhealthy condition of the mucous membrane of the mouth, and renders it a fitting soil for the lodgment and growth of a peculiar vegetable parasite. The parasite thus suitably planted, there develops and causes spots of inflammation which present the appearances known as "thrush."

A dirty, sour state of the feeding-bottle or its nipple will also nourish the plant, which may thus become lodged in the child's mouth.

The affection is particularly common in the hot weather, which favours the growth of the fungus.

CHAP. XXVII.

Symptoms.

At first there is merely redness and some tenderness inside the mouth, which if carefully examined will show numerous very minute transparent blebs. These (spots of lodgment of the parasite) inflame, burst, and form white specks, each perhaps only the size of the head of a pin, with a very narrow red surrounding. The interior of the mouth now becomes angry-looking. It is at this stage that the affection usually for the first time attracts the attention of the mother or nurse. The size of the patches next slightly increase, presenting an appearance as though minute portions of curd adhered to the inside of the cheek or lips; but it will be found that they cannot be moved about as could mere particles of food; nor can they be dislodged without some slight force, and if removed, they leave behind little ulcers, which bleed slightly.

Appearances.

Situation.

Near the corners of the mouth, the inside of the lips, and the under surface of the tongue are the most frequent situations; but the spots may extend over the roof and back of the mouth, even to the tonsils and throat.

Diarrhœa.

Almost always there is some watery diarrhœa accompanying this state, which not infrequently, on account of its irritating nature, excoriates the buttocks.

Occurs only in children who are out of health.

The affection seldom occurs in a child who has not for some time previously been out of health. The healthy mouth will not nourish the seed even if introduced, the soil being unsuitable. Acidity of the stomach and bowels is usually present, the child has not been thriving, and it is thin.

Treatment.

General.

Thorough cleanliness is the first essential. After each meal the mouth should be washed out with a little

CHAP. XXVII.

warm water. The bowels should be regulated by a few doses of the red mixture (49); but if there is much diarrhœa it may be necessary to give an astringent (29). To the milk, lime water should be liberally added. A minimum of sugar should be allowed. The child must be fed frequently, because the efforts at sucking may be so painful as to interfere with nutrition, and after each meal his mouth should be swabbed out with a piece of soft rag moistened with warm water.

Local. Destroy the parasite.

The next thing to be done is to destroy the parasite. This is easily accomplished by the application of borax and glycerine (15) within the mouth after each swabbing. If glycerine be not obtainable, honey may be used, but it is not nearly so good. Another capital application is the hyposulphite of soda (one drachm to one ounce of water), which very quickly destroys the vegetation, but it may not always be easy to obtain the drug.

When the throat is involved.

When the mouth is extensively affected, particularly if the throat be involved, it will be desirable to give a mixture of chlorate of potash (2).

Good hygienic surroundings, supporting treatment, and a carefully regulated diet are essential.

Mother's nipples.

A mother who is suckling an infant affected with thrush is apt to suffer from sore nipples. She should therefore carefully wash her nipples with borax and water after each nursing.

## CHAPTER XXVIII.

### INFLAMMATION OF THE MOUTH.



INFLAMMATION of the mouth is of three kinds—simple, severe, and dangerous.

1. Simple. Nature, &c.

1. SIMPLE INFLAMMATION OF THE MOUTH.—This is a trivial affection, engaging only the mucous membrane, and it in many respects resembles thrush in appearance; but it is a different disease, and does not depend upon the presence of a parasite. While thrush is exclusively an affection of early infancy, this inflammation never occurs at that period of life. It is most common between the ages of one and five years.

Different from Thrush.

Cause.

Its cause lies in a state of constitutional debility accompanied by disorder of the stomach. Sometimes it follows measles, when it not infrequently assumes some of the characters of diphtheria, and then of course it becomes a serious affair.

Symptoms.

The child is out of sorts; he is peevish, and he suffers from offensive diarrhœa for two or three days. The mouth then becomes sore, red, and hot. On inspection numerous spots of a dirty white colour surrounded by a red margin are observed within the cheek, upon the tip and edges of the tongue, the lower lip, and even upon the throat. These spots soon burst and form ulcers. Feeding is painful. Saliva dribbles freely from-

CHAP. XXVIII. the mouth. As one crop of ulcers heal, another comes on, and thus, if unchecked by remedies, the affection may run a prolonged course.

Treatment. Attention to the cleanliness of the mouth, regulation of the diet (p. 101) and of the bowels, by the red mixture (49), and the use of an alum gargle (half a drachm to six ounces of water), will usually effect a ready cure; or, better still, borax may be used (15) instead of the alum. Should any ulcer become large, it is well to touch it rapidly and gently with caustic, but this should not be repeated within an interval of two or three days. A vegetable tonic, such as chiretta (69), or quinine (66), should be given during and after convalescence. Should the case prove troublesome, a few doses of the chlorate of potash (2) will be useful.

2. Serious. Attacks the gums. 2. SERIOUS INFLAMMATION OF THE MOUTH.—Attacks *chiefly the gums*. It usually occurs in children over two years who are debilitated, and who at the same time occupy close, unhealthy rooms, and obtain inappropriate, bad, or insufficient food. Among the natives it is common enough, and sometimes it is seen in neglected European children—not that the occurrence is absolute proof of neglect, though certainly strongly presumptive of it.

Symptoms. On examining the mouth the affected portion of gum is seen to be swollen and of a dark violet-red colour. It is covered with a soft greyish deposit, which admits of easy removal, and the part bleeds easily. The amount of constitutional derangement which precedes this state of the gum is very variable, but as a rule it is not proportionate to the gravity of the case, or greater than that which ushers in the simple variety of

Not commensurate with seriousness.

mouth inflammation. Indeed, not infrequently the first thing that attracts attention is the offensively smelling breath and some swelling of the upper lip, which leads to the discovery of the state of the gum. At the same time the glands under the jaw at the affected side are apt to become sore and enlarged. The cheek next swells and becomes boggy to the feel; the impression of the teeth on the inside being retained. Soon afterwards ulceration of the gum commences at the base of the teeth, from which point it proceeds with variable rapidity. Very fœtid saliva, streaked with blood, flows from the mouth. Those portions of the cheek which come into contact with the diseased gum may ulcerate to some extent. If the ulceration of the gum is extensive, the teeth will loosen, and even fall out. When the ulceration has ceased to spread, recovery is initiated; the swelling diminishes, the surface of the sore becomes clean, the flow of saliva diminishes, and the deposit on the gum lessens till it finally disappears.

The cheek and gums.

As a rule cases properly treated recover, and the patient is convalescent at the end of a week or ten days.

Prospects.

The utmost cleanliness of the parts must be observed. The mouth should be constantly washed out with warm water and salt, or with a weak solution of Condy's fluid (one drachm to eight ounces of water). The diet should consist of beef-tea, milk, raw egg and milk, pounded meat, and such like nutritious articles as the child can be induced to take, avoiding sweets and much farinaceous food. The brandy and egg mixture (*see* receipt 10) is always likely to do good. The bowels should be carefully regulated, neither constipation nor diarrhœa being permitted (49).

Treatment. Local. Diet. Bowels.

CHAP. XXVIII.

Chlorate of potash a specific.

From the commencement the chlorate of potash mixture (2) should be given and persisted in till recovery has been completely established. This medicine is most valuable in these cases, and if not at hand at the moment, should be procured in the crystalline form, by post, with as little delay as possible.

During convalescence a tonic (such as 65, and afterwards 68, 71) should be given till the strength is completely recovered, and it will be well to allow the child a little claret and water with its meals.

3. Dangerous, or "cancrum oris."

3. DANGEROUS INFLAMMATION OF THE MOUTH *affects the cheek.* This most formidable kind of inflammation and mortification of the cheek is known under the name of *cancrum oris.* It only attacks those who are in a very bad state of health and suffering from debility, and is most common between the ages of two and five years. Among poverty-stricken and half-starved native children it is comparatively common as a sequence of the ordinary malarial fevers of the country. Sometimes it occurs in unhealthy children after measles. Dirty poverty and foul air will do much in such cases to initiate this calamity. European children sometimes suffer from it after very debilitating diseases.

Class attacked.

Symptoms. Come on mildly.

There is very little general illness to indicate what is coming. There is, moreover, very little, if any, local pain. The first thing observed will probably be a swollen, shiny cheek; "it looks as if the surface had been besmeared with oil, and in the centre of the swollen part there is generally a spot of a brighter red colour than that around" (West). The cheek feels hard. The breath is very fœtid, offensive saliva flows

profusely, the glands under the jaw swell, the gums become spongy, and perhaps the teeth may loosen.

The ulcer.

Inside the mouth, opposite the red external spot, an ulcer will be detected—a dirty, ash-coloured, irregular sore. This ulcer increases in size, the red spot on the cheek becomes black, and the stench is great. High fever, much general disturbance, and prostration accompany the progress of the mortification, but there is no considerable local pain.

Great constitutional sympathy.

Portion of cheek dies.

Beyond the blackness a ring of bright redness will be observed. The black portion now begins to separate at the edges, till finally becoming detached, it leaves a hole through the cheek, opening into the cavity of the mouth—if the child has lived so long.

Prospects.

Recovery the exception.

The disease is of a most dangerous nature. Apart from the local trouble, there is the danger of the lung becoming infected from the mouth secretions or through the breath; or a general blood poisoning may ensue. Recovery is the exception. Should the patient survive the ordeal, great deformity is sure to result; but after the complete restoration of the general health, operative surgery may be able to accomplish much in remedying this.

Treatment.

Diet and stimulation.

In the absence of a physician the best thing that can be done is to support the patient's strength by every means in the power. From the earliest moment jugged soups, the juice of raw meat (receipt 6), egg beaten up with brandy, and such highly-concentrated nutriment must be given with a liberal hand and at short intervals. One of the preparations of fluid beef, if procurable, will prove a valuable auxiliary. Night and day nutrition and stimulation are to be adminis-

CHAP. XXVIII. tered at intervals of an hour, except during actual sleep, which unfortunately is of rare occurrence. Emphatically life cannot be saved without energy and perseverance in this matter.

Local. The parts should be repeatedly syringed with some non-poisonous fluid, such as salt and water, or Condy's fluid properly diluted (p. 245). Syringing with a solution of perchloride of mercury (1 in 1,000 of water) is no doubt more effectual, but this medicine is such a powerful poison that an amateur cannot be advised to compound it. The solution might, however, be procured. Swabbing the stinking slough with pure carbolic acid is calculated to prevent spreading and blood poisoning, but this should be done cautiously, and only once, or at most twice. A small light poultice, made of pounded charcoal and linseed, will mitigate the stench, first smearing the surrounding parts with eucalyptus oil.

Opium. When there is a tendency to delirium, total inability to sleep, and great restlessness, much benefit will be derived from a timely dose of opium (one drop of laudanum in 24 hours for every year of age completed); but caution must be observed not to produce depression by the use of this drug. Give the steel, quinine, and potash mixture mentioned on p. 265 internally.

Steel and potash.

After recovery. Should recovery eventuate, a tonic of steel and quinine (68) will prove valuable. Considerable deformity is sure to be left; but when the child's health has been entirely re-established, after the lapse of some months, the surgeon may be able to do much to remedy it.

## CHAPTER XXIX.

### (1) QUINSY, OR TONSILLITIS.



THIS is the ordinary inflammatory sore throat. It is an unusual complaint in children under ten, and it is rare under five years of age.

Age of occurrence.

It is commonly caused by cold, but insanitary surroundings are sometimes responsible. By some it is believed to be infectious.

Cause.

Slight chilliness succeeded by fever ushers in this complaint. Soon some soreness of the throat is complained of, the tongue is very furred, and the face is flushed. Swallowing is difficult and painful. Upon inspecting the back of the mouth, a tonsil (seldom both) will be seen swollen and red. After thirty-six or forty-eight hours, most probably the disease will begin to resolve itself. Sometimes, though seldom in the child, an abscess may form in the tonsil, and then, of course, the distress will be great and prolonged till it has burst.

Symptoms.

Deafness may sometimes be a symptom, but it is of no importance, being due simply to the swollen tonsils temporarily blocking up the little ear tubes from the mouth.

CHAP. XXIX.

Difficulty of breathing is a possible but rare occurrence when an abscess is forming; though indeed it may happen without any suppuration being present. The symptom is one which need not give anxiety; the child will not suffocate, even though an abscess should form.

Prospects.

There is never any danger. Repeated attacks may bring on chronic enlargement of the tonsils, and its attendant evils. A case usually lasts for 6 or 7 days.

Treatment.

The treatment need only be of the simplest kind. Rest in bed, light diet, cooling drinks, and a brisk saline purgative (one drachm of Epsom salts in some water). The inhalation of steam from over a jug, fomentations followed by poultices to the throat, which should afterwards be wrapped in cotton wool, and after twelve hours, swabbing the throat with a solution of nitrate of silver (10 grains to one ounce of distilled or rain water) will effect a ready cure.

In the rare case of an abscess forming, if surgical assistance cannot be obtained, it must be left to burst. No attempt should be made by an amateur to open it.

### (2) CHRONIC ENLARGEMENT OF THE TONSILS.

Causes.

The important point to know about quinsy is the possibility of chronic enlargement of the tonsils resulting from repeated attacks, and the constitutional effects of such enlargement. But, unfortunately, chronic enlargement occurs sometimes in children who have never had quinsy, an unhealthy constitution being apparently sufficient cause in these cases.

Symptoms.

The tonsils will be found projecting so far as to touch or nearly to touch each other, thus partly obstructing

the entrance of the air into the windpipe. As a result, the child snores loudly during sleep, the voice is thick, and there may be partial deafness. Almost always there is chronic cough, caused by the irritation; sometimes there may be actual difficulty of breathing.

Effects.

Children so affected do not thrive. The narrowed orifice sufficiently impedes swallowing, even though there be no pain, to prevent the consumption of sufficient nutriment; consequently we have emaciation. The difficulty of breathing prevents the full expansion of the chest, and the result is flattening, which remains permanent throughout life. Even should the condition be subsequently remedied, it is not always that the articulation becomes natural, or that the hearing will be as acute as it otherwise would have been.

Treatment.

This condition calls for special attention to all matters connected with the hygiene of the child. A life in the open air and an abundance of animal food are essentials. Cod liver oil and iron (71) should be administered persistently. Each day the tonsils should be freely brushed over with a solution of nitrate of silver (20 grains to 1 ounce of rain or distilled water), or pure tincture of iodine. The enlargements will sometimes, under this treatment, subside. But should they remain, or continue to increase, the child should be sent to a surgeon, who will remove the tonsils in whole or in part by a comparatively simple operation.

(3) ABSCESS BEHIND THE THROAT.

Sometimes a child will show signs of throat affection, evidenced by painful swallowing, combined with an increasing difficulty of respiration, till the latter has become very distressing, or even alarmingly impeded.

CHAP. XXIX.

Signs.

On inspection there may be no appearance of quinsy or inflammation, but a smooth bulging will be observed at the back part of the cavity of the mouth, more at one side than at the other, without however any redness to speak of. The tonsils are clearly not affected. If this bulging be pressed firmly by the finger, a feeling of elasticity is conveyed and much pain is caused. The constitutional symptoms are lost sight of in the presence of so much local distress.

Nature.

All this is due to an abscess having formed in front of the spine, between it and the back of the mouth.

Duty of parent.

The only remedy here is surgical interference by a competent person. All that the parent can do in the meantime is to sustain the patient with such liquid nourishment as he can be induced to swallow. But no time should be lost in obtaining professional aid.

Occasionally such abscesses burst, and then complete relief is the usual result; but the condition is always an anxious one, because of the pressure upon the space of the air passage.

## CHAPTER XXX.

### (4) CROUP.



Varieties.

THIS is a disease of the throat either chiefly spasmodic, or partly spasmodic and chiefly inflammatory in its nature.

Upon the absence or presence of inflammatory exudation will depend the absence or presence of serious symptoms, and the intensity of the accompanying fever. For general practical purposes, therefore, it is important to classify the disease into (*a*) spasmodic croup, and (*b*) inflammatory croup; though there is probably always some inflammation present.

Spasmodic. Symptoms.

1. SPASMODIC CROUP is a comparatively mild complaint. It may commence either with symptoms of a slight cold, cough, and perhaps slight fever, or it may be ushered in at once without any introductory symptoms, by a sudden attack of difficulty of breathing.

Usually, however, there is a hoarse metallic cough, some general indisposition, a foul tongue, and a quick pulse. The respiration soon becomes crowing—that is, at each endeavour to draw air in through the spasmodically narrowed orifice of the throat a peculiar sound is produced—a sign which is unmistakable. An attack of difficulty of breathing follows; it occurs as a sudden paroxysm, usually at night, and it may last for a hour or longer. After the attack the child is tolerably well, the voice perhaps remaining a little hoarse, but that is all. A similar attack may occur on the following night, if not sooner. Throughout, the fever, if present at all, is

CHAP. XXX.

but slight; and it subsides after the attack, leaving the child comparatively well and able to run about, almost free from all throat symptoms. Of the cause of this complaint we know nothing more than that cold is sufficient to induce it in those who are predisposed.* An emetic of ipecacuanha wine (40) had better be given as soon as the case comes under observation. Steam should be inhaled, an alterative purgative (56) administered, and the child, when the paroxysm commences, should be put into a warm bath. A dose of mixture No. 7 is often very useful at this stage. After an hour the emetic may be repeated if needful, as also may the bath. The air of the room should be rendered warm and damp (by putting water in a kettle, the spout of which projects into the room, on the fire), but not over-heated: as a rule, the room is made much too hot. Fomentations to the throat in the shape of a sponge wrung out of hot water and applied will also prove useful. A dose of chloral (8) should be given, and the paroxysm having passed, the bromide of potassium mixture (9) commenced, and continued steadily for two days or so after the complete recovery of the child. Non-exposure to cold, and careful regulation of the diet and bowels, are points demanding special attention for some time following.

Cause.

Treatment.

Upon the reappearance of any acute symptoms, a few drops of ipecacuanha wine should be given every hour, so as to produce and perpetuate nausea, till the symptoms subside.

Child-crowing.

There is a form of spasm of the throat called CHILD-

* The muscles at the orifice of a child's throat are peculiarly irritable, and easily excited to spasm. The difficulty of breathing is due chiefly to this spasm, but partly, too, to the swelling of the part and the accumulation of mucus.

CROWING, which is most frequently met with during teething between the ages of six and nine months, but sometimes later. It is more frequent among hand-fed children than others, and among the weakly than the strong. A drooping infant on waking from sleep, when sucking or crying, makes a strange crowing sound, at first not very loud. After a time this increases to paroxysms of difficulty of breathing, which may be so severe as to produce lividity of the face. At the end of a few moments, however, the spasm yields, air is drawn in through the narrow chink with a shrill crowing sound, and the paroxysm is over. But it recurs again and again at intervals, perhaps of a few hours, perhaps not for days. Sleep usually succeeds an attack, after which the infant is apparently as well as ever till a recurrence happens. The affection is not accompanied by fever unless there be any other disease present. CHAP. XXX.

Causes. This affection is more of the nature of a convulsion of the throat than anything else. It is particularly common during teething, which often causes it; overfeeding and constipation predispose to it. A condition of health below par is, however, a necessary preliminary, and rickety children are peculiarly liable to it.

Prospects. These cases usually do well, but if the attacks increase in frequency and severity they may wear a child out, till exhaustion and general convulsions ensue, and lead to a fatal termination in a small number of cases.

Treatment. During an attack we should proceed as when restoring a stillborn child, by slapping it, dashing cold water upon it, exposing it to a cold current of air, pulling the tongue forward, and, if necessary, employing artificial respira-

CHAP. XXX.

tion (p. 35). The warm bath should always be used, and a sponge wrung out of hot water may be applied to the throat under the chin, while smelling salts is held for a moment at intervals to the nostrils. In the intervals between attacks we should endeavour to remove the cause by lancing any pressing tooth, and by attending to the diet and nursing, as laid down in Chapters V. and IX. The bowels should be kept moderately loose (*see* Constipation). Cold water bathing twice or three times a day is a means of prevention which, it is said, few cases will resist. Bromide of potassium (9) should be used when an attack theatens, or till the excitement following it has subsided, and its administration may be preceded by one or two doses of chloral (8). Tonics are very essential, and of these the iodide of iron and cod-liver oil (71) is the best form of exhibition, but of course the active symptoms must first have been controlled. The child should, contrary to the general idea, be kept in a cool atmosphere.

2. Inflammatory.

2. INFLAMMATORY CROUP is a serious affection. By many high authorities it is believed to be the same disease as diphtheria, only expressing itself differently by spasmodic symptoms because a lower part of the throat is affected, but there is strong ground for maintaining that the diseases are perfectly distinct in their natures.

Nature.

It consists of an acute inflammation of the mucous membrane lining the top of the windpipe. As a result of the inflammation, swelling, and the exudation of a white incrustation or "false membrane" ensue, which so block up the narrow air aperture as almost or altogether to close it. At the same time spasms of the

throat occur at intervals, producing paroxysms of cramp and difficulty of breathing. CHAP. XXX.

Symptoms. At first there are all the symptoms of a common cold, with fever, thirst, drowsiness, and running at the nose. The child complains of his throat, at which he clutches when swallowing. Hoarseness comes on, to which after a time is added the rough ringing cough. The fever increases, and these symptoms continue for some twenty-four or thirty-six hours. At night an attack of difficulty of breathing causes the child to awake in a fright, gasping for breath. The paroxysm passes, and during the rest of the night the metallic cough, crowing, and impeded respiration continue, leaving the child exhausted in the morning, restless, flushed, the voice almost extinct. A slight improvement succeeds, and a little sleep may be obtained, but the amendment is only temporary. As the day goes on the force of the fever again increases, and the paroxysm returns with greater violence than before. Perhaps the face may become livid, and the natural tint may not be recovered even between the paroxysms. If the skin between the ribs becomes depressed at each respiration we may be sure that little air is entering the lungs. Cold, clammy sweats, a rapid, weak pulse, drowsiness, and lividity of the face, indicate an alarming condition.

The attack.

Prospects. This kind of croup is always serious; but so long as the symptoms last mentioned are absent the case may be regarded hopefully.

Distinction. It may be known from the spasmodic variety by the preliminary fever, the hoarseness, the feeble or extinct voice, the continuousness of the fever, the increasing

CHAP. XXX. difficulty of breathing, and chiefly by the fact that the croupal sound continues during the intervals between the paroxysms.

Treatment. Bath and inunction. As soon as it is suspected that a child has croup he should be placed in a warm bath for ten minutes or so, the whole skin should be rubbed with oil, and he should then be put to bed in a room the air of which

Moist air. is warm and moist. By attaching a tube to the spout of a kettle which is kept boiling on the fire, the steam will be led into the room, and if the tube be long enough it may be led close to the child underneath a blanket tent (one side of which is left open) constructed over the bed; but it is a matter of great importance that the child be not half stewed and half suffocated in a confined, humid, and contaminated space, as is too often done. A teaspoonful of terebene may with advantage be added to the water in the kettle.

Emetic. An emetic (39, 40) should now be given, or if the symptoms have been urgent, it ought to have been the

Bowels. first thing done. The bowels, which are usually costive, should be acted upon after the emetic by a

Fomentations and inhalations. brisk purgative (56). A large sponge wrung out of hot water should be applied to the throat and alternated with another till the skin becomes red and irritated, and afterwards the part should be wrapped in cotton wool. The inhalation of steam is soothing, and therefore useful; and it is a good plan to add about twenty drops of carbolic acid to the hot water of each inhalation.

Keep up nausea. After some four hours or so it is well to repeat the emetic, and in the meantime the child should have been kept slightly nauseated by means of ipecacuanha (five

drops or less of the wine each hour upon a lump of sugar will answer), or by the frequent use of mixture No. 36. CHAP. XXX.

Troublesome cough at this stage is frequently much relieved by poulticing the chest effectually before and behind. Poultice chest.

Very frequently the above measures, or a repetition of them, will cut short an attack of croup. But should the case still continue to proceed badly the mixture is to be omitted, and an alterative and antispasmodic substituted in the form of mixture No. 1, of which one teaspoonful should be given every second hour night and day. These means usually sufficient. If not, prescribe No 1.

The diet at first should be very light, and consist chiefly of slops; but as we omit the depressing medicines a more liberal allowance must be given, pretty rapid advance being made so as to anticipate the accession of constitutional depression. Beef tea and wine ought to be given upon the slightest appearance of typhoid symptoms (p. 203, note). Diet.

Sometimes croup demands the performance of an operation to save a child's life. Should a surgeon propose to do so, the mother ought not to oppose his advice. No surgeon will lightly undertake a task of such responsibility, and one which under these circumstances does not prove largely successful. A mother's not unnatural plea for a little more delay may remove even this chance of escape. Operation.

# CHAPTER XXXI.

## (5) DIPHTHERIA.

CHAP. XXXI.

Definition.

THIS formidable disease is characterised by inflammation of, and exudation upon, the back of the mouth and throat. The whole constitution suffers under great prostration; and after recovery, paralysis or other nervous phenomena are not uncommon.

Infectiousness.

It is highly contagious, and usually prevails epidemically. A child cannot be deemed altogether free from infection till a month has elapsed since complete

Incubation.

recovery. After exposure to infection, the disease may commence within thirty-six hours or even less, but more usually two or three days elapse. The committee of the Clinical Society put the usual incubation period at two days, and state that it rarely exceeds four days. A week's freedom from symptoms, after exposure, may be regarded as evidence that infection has not been incurred (pp. 154, 155).

Modes of spreading.

Diphtheria is usually disseminated through direct infection. The germs are given off chiefly from the throat with the expectoration, but in severe cases the membrane lining the intestine also becomes affected. Hence the affection may be spread, through the influence of gas from privies into which the excreta have been thrown, if they have not previously been disinfected (p. 146); or possibly, though certainly seldom, through

the air in the immediate vicinity of the patient, or by his foul linen; as well as by direct implantation, such as may occur in the act of kissing, or by transferring a feeding-bottle from an infected to a healthy child. Direct implantation is certainly the most potent and probably the most frequent mode of infection.

Illustration of air infection.

"On one occasion, when called to investigate a case at a detached and perfectly isolated house in the country, I," writes Dr. Thursfield, "found that the patient had been to a neighbouring town, and had entered and been exposed to sewer gas in a house on a short line of sewer, which I knew had become specifically contaminated by diphtheria. The owner of the property instructed a surveyor, residing some little distance off, to examine this sewer. He did so, and for that purpose had it opened, and was much exposed to the gas, and the second or third day after I received information that he was struck down with an attack of diphtheria, from which and from its remote sequelæ he suffered severely."—(*Lancet*, August, 1878.)

Milk which has been kept in a house infected with diphtheria is another common mode of spreading the disease.

The infection is portable. A visitor may convey it from house to house in soiled clothing, a condition in which the germs remain long active.

There is clear evidence that cold and damp and the massing together of children in schools are exciting causes.

Is preventable.

It will thus be seen that, although the modes of dissemination are numerous and subtle, they are all capable of being controlled by isolation and disinfection (pp. 138, 146); or they are easily avoided. Attendants should wash their hands and be careful not to allow any particles of ejected matter to adhere to clothes or linen. All such soiled materials should be at once removed and disinfected.

CHAP. XXXI.

Symptoms. Great depression always.

Even though the disease occur in its mildest form, there is always much constitutional depression, as the result of the blood-poisoning upon the nervous system.

Premonitory.

Throat.

Tongue.

Temperature.

For one or two days there is fever, lassitude, and pains in the limbs, but these symptoms need not necessarily be severe. Some soreness of throat is now noticed; the tonsils and all the back of the mouth are seen to be very red and livid, with here and there small patches of white lymph upon them. Soon all these parts become covered with a film of greyish-white substance; there is difficulty of breathing; the glands of the neck enlarge; the tongue is red at its tip and foul behind. The temperature may rise to 104° or 105° by the second day, but more usually 101° or 102° is then the reading of the thermometer. It may indeed be stated that anything over 103° indicates approaching danger, and the fever may begin to fall on the fourth day. The breath is very offensive. There is difficulty of swallowing, and the patient suffers from a constant "hawking," caused by the endeavours to get rid of the tenacious secretion. The white substance becomes greyish, dense and shreddy; perhaps separating in places; and showing a raw, ulcerated surface beneath. There may be a good deal of nasal discharge. The urine contains albumen in the majority of cases, making its appearance about the third or fourth day. The general prostration is intense. At this point, either recovery begins or the child sinks. If the former, the false membrane separates, the raw surface heals, and convalescence commences. If the latter, the difficulty of breathing increases: should the membrane become

False membrane.

Signs of recovery and of death.

detached, another rapidly forms, stupor from blood-poisoning comes on, and death ensues. Sometimes, though happily rarely, sudden death occurs from failure of the heart, without any warning symptoms.

Prospects.

Diphtheria is always a dangerous affection. Scanty urine, difficult breathing, and extreme prostration are bad signs. It is said that the occurrence of a thick nasal discharge is a favourable sign as indicating commencing resolution. A rise of temperature after the fifth day is ominous. Diarrhœa during the latter stages indicates dangers. The younger the patient the greater the danger.

Distinction.

Diphtheria cannot well be mistaken for croup; the absence of paroxysms of difficult breathing, and the condition of the throat as actually seen, are sufficiently distinctive.

For scarlatina it might be mistaken in its very early stages, but the absence of rash after the second day, and the throat incrustation, will be evidence enough.

Treatment.

Cold locally.

The child should be put to bed in a large, well-ventilated room. He should be allowed to suck ice freely, and a bladder containing ice or freezing mixture should be applied externally to the throat, with the object of keeping down the inflammation.

Further objects.

The further treatment has three objects in view— (1) to support the patient's strength, (2) to relieve the throat, and (3) to prevent blood-poisoning.

The most concentrated nourishment from the beginning.

From the very commencement concentrated nourishment must be given; the strongest jugged beef soup, Brand's essence of meat, Johnson's fluid beef, peptonised foods, eggs beaten up with milk, and occasionally egg and brandy should be sedulously given at short intervals.

CHAP. XXXI.

Stimulants are essential from the beginning, and they are to be given with guarded liberality. Without such feeding and stimulation no treatment can avail. If there is difficulty in accomplishing the administration of nutrition by the mouth, the substances named should be injected into the bowel, an ounce at a time, and retained there by gentle pressure.

Avoid purgatives.

Unless there is actual constipation it is better not to trouble the child with purgatives.

Position of patient.

When the pulse shows signs of failing, the patient should be kept very quiet in bed, with his head low, and he should never be allowed to assume the erect posture while this state lasts, lest fainting, which might easily prove fatal, be induced.

Moist and heated air.

When the breathing is becoming impeded, or when the false membrane is seen to become dense and thick, the directions as to placing the patient under a blanket tent, which is supplied with moist and heated air, as described in the last chapter, should be observed. The object now is to cause the membrane, by the aid of heat, to detach itself, cold having done what it could to check the violence of the inflammatory process, but the patient may still be allowed to suck ice. With this object, inhalations of steam frequently repeated, and the application of a warm moist sponge externally, are likely to prove beneficial. To each pint of the hot water, used for the inhalations, it is desirable to add twenty drops of carbolic acid.

Should the membrane begin to separate, these measures must be persevered in with increasing assiduity; but anything like a stewing process in a confined humid space would be dangerously depressing.

Medicines and applications.

As to medicinal agents, so soon as any signs of the film or exudation becomes noticeable on the throat or tonsils, these parts should be thoroughly swabbed over with an antiseptic application; and the following mixture should be prepared with accuracy in the manner below described:

Take of chlorate of potash, 30 grains; strong hydrochloric acid, half a drachm; quinine, 12 grains; tincture of steel, 40 minims; syrup and water sufficient to complete up to 10 ounces.

Place the potash in a ten-ounce empty bottle; pour upon it the strong acid, and cork the bottle *loosely*, or cover it *lightly*. When the bottle is full of gas, as it will be in a few minutes, add the water little by little, shaking the bottle each time. Finally add the syrup, quinine, and steel.

N.B.—Should hydrochloric acid not be available, the mixture may be prepared by substituting three times the quantity of tincture of steel here ordered, and using two-thirds of it as though it were the acid.

Of this mixture give two teaspoonfuls every fourth hour to a child five years of age; but when the difficulty of swallowing becomes very great, it is wiser to omit internal remedies altogether than to exhaust the child with attempts to administer them. There will be exhaustion enough in the endeavours to swallow food.

Importance of local treatment.

But we must ever recollect that diphtheria is a disease of local origin. The germs secure a lodgment in the throat, where they undergo incubation, and their products are diffused throughout the system as a blood poison. The most recent investigations favour this view, which points to the immense importance of local treatment with the object of killing the germs and thus cutting off the supply of poison which they are continually manufacturing and diffusing throughout the

CHAP. XXXI.

body. But these germs invade every nook and corner, and reside in the deeper layers of the mucous membrane; hence it is no easy matter to attack them effectively, and thus is accounted for the numerous failures of local treatment, which, if it is to be anything but a fiction, must be carried out masterfully and thoroughly without an excessive sympathy for the annoyance and fatigue it may occasion the child.

Nature of local applications. Boracic acid.

Of what is this local treatment to consist? Certainly not of caustics, but of antiseptic agents. Of these, *boracic acid is the safest* and most innocent to place in the hands of an untrained nurse, but the *bichloride of mercury (corrosive sublimate) is the most efficient.*

Corrosive sublimate.

The former (boracic acid) is best prepared by making a saturated solution with glycerine, and this is to be applied every hour, in the most thorough manner, by means of a camel's hair brush. The latter (corrosive sublimate) is to be dissolved in water in the proportion of 2 grains to each ounce,* and it is to be similarly applied every second hour. (*Read the note.*) Should either of these drugs not be at hand there is another of a perfectly innocent nature, which is deserving of attention, namely,

Sulphur.

common powdered *sulphur*, which is always procurable. It should be dusted over the parts with a dry brush every hour. The decomposition of the sulphur caused by the exudation acts as a germ slayer. At the same

* This is a strong solution, and a serious remedy to place in non-professional hands, but of its efficiency the writer is so convinced that he mentions it in view of the terrible emergency with which parents sometimes find themselves face to face, in isolated regions. The greatest caution is necessary in handling it.

time the sulphur in the proportion of ½ an ounce to a pint of water or rose water may be used as a gargle if the child be old enough. If a scent spray bottle be at hand, *carbolic acid* solution (one drachm to ten ounces of rose water) will make a good *spray*, which may be diffused down the throat at intervals between the applications.

Carbolic spray.

To sum up: the corrosive sublimate solution is the most efficient, but it is a dangerous remedy to compound and handle, and one not lightly to be used by untrained persons. The boracic acid is next in order of efficiency, and it is perfectly safe. Sulphur is a remedy possessing undoubted valuable properties, and as it is always at hand it is a good stand-by. Carbolic acid is excellent, but in solutions sufficiently strong to be relied upon alone it would not be suitable. A very much stronger spray than that recommended here is, however, often used. The weaker spray is very agreeable, and is certainly calculated to help one of the applications. In all cases when the disease has advanced, the nostrils should be syringed out several times a day with Condy's fluid solution.

Summary.

The nostrils.

By proceeding in this way the remedies are brought into actual contact with the parts at short intervals; and the medicine is rapidly introduced into the blood.

Should the case continue to advance unsatisfactorily, the respiration becoming seriously impeded, the parent, if so advised by a surgeon, should not deny the child the chances afforded by the operation of tracheotomy.

The weakness of convalescence is best met with tincture of steel and cod liver oil administered together

The debility of convalescence.

CHAP. XXXI.

internally, and by change of air. A sea trip, when possible, is always advisable.

Paralysis as a complication.

Diphtheria not infrequently is followed by paralysis —generally partial—involving various parts of the body. Generally this condition is recovered from, being amenable to treatment by steel, quinine, fresh air, and good food. The muscles of the palate are usually the first to be thus affected; the voice then assumes a nasal, drawling, monotonous character; fluids pass through the nose when attempts are made to drink, and the child experiences great difficulty in expectorating. The eyes are, next in order of frequency, affected; confusion of sight and giddiness being the chief symptoms. If the legs become affected, a trembling and uncertain gait soon discloses the fact.

The amount of paralysis which may succeed a case bears no proportion to the severity of the primary disease.

This complication may last from six weeks to a year; but, as stated, the natural tendency is towards recovery after two or three weeks.

Alimentation.

In some cases of diphtheritic paralysis the danger of death by starvation is great, as the child cannot swallow any food, all being returned through the nostrils. Then the only hope is to feed the child through the nostril by means of a soft tube passed into the gullet and a syringe or funnel. To accomplish this satisfactorily and without danger is very easy, if the parent has been shown how to do it by a skilled person.

Diphtheria complicating measles.

As a complication of measles, a diphtheritic state of the throat may occur, sometimes simultaneously with

the measles itself, more frequently as recovery from the latter is taking place. In such a case the affection should be treated in all respects as though it were a case of pure diphtheria.

## CHAPTER XXXII.

### (6) MUMPS.

CHAP. XXXII.

**Nature.**

THERE is a contagious affection termed mumps, which, though not really a disease of the throat, had better be mentioned briefly here. It is very rare in infancy, and in those under six years it is not common. The affection is an inflammation of those glands which secrete the saliva, the largest of which are situated one at either side of the face just beneath the ears. A child remains capable of propagating the affection for two or perhaps even three weeks after the disappearance of the disease. The patient is most infectious during the earlier days of the illness, and then infection diminishes gradually. A susceptible person first seen ten days after exposure to infection may be quarantined with every prospect of preventing spreading. The infection is not easily conveyed even short distances.

**Cause.**

Mumps seldom attacks the same person twice. It is spread only by infection, after exposure to which perhaps a fortnight will elapse before symptoms appear.

**Symptoms.**

A feverish cold and stiffness of the jaw are the earliest observed symptoms. Then appears a painful hard swelling in the neighbourhood of the cheeks and ears, extending beneath the chin. The child is unable to

open its mouth. Any motion of the jaw is painful, the face is distorted. The fever and swelling increasing, reach their maxima on about the third or fourth day; from which time all symptoms gradually diminish, till complete recovery is attained by about the eighth or tenth day.

The swelling may occur on one side only, run its regular course, and then be succeeded by the same appearance and symptoms on the other side; or both sides may be affected simultaneously.

Sometimes a hardness and some small amount of enlargement remain for a considerable time after recovery.

**Migration of inflammation.**

A singular fact about mumps is the liability of the inflammation to leave the salivary glands, and transfer itself to the testicle of a boy or breast of a girl.

**Treatment.**

Rest in bed, a brisk purgative (54, 56), fomentations, and perhaps a few doses of fever mixture (38), together with restriction to a light diet, is all the treatment that is essential during the febrile stage. Subsequently painting the hard swellings with iodine, or rubbing in the iodine ointment (27), and a short course of tonics (66, 69, 72) will complete the cure.

## CHAPTER XXXIII.

### COUGH, INFLAMMATION OF THE CHEST, BRONCHITIS, BREATHLESSNESS.

CHAP. XXXIII.

Only a symptom.

COUGH is in reality but a symptom, it is not a disease in itself. It is, however, such a constant and early symptom that it primarily attracts attention in cases of chest affection. Cough may imply very little or it may mean a great deal. We are familiar with the expresssions, "slight cough," "bad cough," and so forth, and we understand the great differences in their signification.

Frequency.

No less than one-fifth of all the children under five years of age who die in London succumb to diseases of the organs of respiration. In India there is not the same liability to these complaints, and when they do occur they run a milder course; still there is no lack of such cases.

Ordinary cold.

An ordinary COUGH AND COLD is a trivial affair, consisting of irritation of the membrane lining the nose, eyelids, and upper part of the throat. It is not necessary to occupy space by entering into a description of the symptoms of this affection, which are known to all; or to detail the simple household treatment which effects a ready cure. Prescription 46 is a suitable domestic cough medicine.

There are two other forms of unimportant cough

which must be alluded to, lest their nature be mistaken. (1) The first is the SPASMODIC COUGH, or stomach cough, as it has been called, from which children may suffer as a result of gastric or intestinal derangement. This cough is loud, barking, and hoarse; the child is in its usual health, the only thing noticed is that it suffers from occasional fits of severe coughing. None of the symptoms of an ordinary cold are present, nor yet any of the symptoms to be described further on, which indicate that the chest is affected. Upon examining the throat it will be found slightly irritable and red, aud probably the uvula (or small pendulous portion of flesh) will be seen to be unusually red, elongated, and possibly slightly tumefied. It is easy to cure this kind of cough. In the first place a mild aperient had better be used (48, 50), and this should be followed for some days by the use of the red mixture (48). The subsequent employment of tonics (69, 72), and the daily application of the glycerine of tannin (26) to the throat, together with proper regulation of the diet, will soon remove the local irritation which is responsible for the symptoms. (2) Children not infrequently are affected with NIGHT-COUGH, particularly at the time of teething. It is a short, dry cough, which commences soon after the child has been put to bed, causing much annoyance and disturbing the rest. After a couple of hours or so it ceases altogether, and the child passes the remainder of the night quietly. The general health is not much affected, though children so suffering appear to be somewhat out of health. This cough is wholly of a nervous nature, and may be removed by pursuing a course of good

Spasmodic cough.

Symptoms.

Treatment.

Night-cough

Symptoms.

Nature.

CHAP. XXXIII. living, with a little stimulation in the shape of largely diluted wine at dinner-time, if the child be old enough.

Treatment. Tonics (69, 72, 71) should at the same time be given and persisted in for some time after the symptom has ceased. But the chief means of securing immediate relief is by the aid of the bromide of potassium mixture (9), which should be given twice a day, either alone or combined with mixture No. 46.

## INFLAMMATION OF THE CHEST.

Inflammation of chest. To be able to discriminate between such unimportant complaints and the more serious condition of INFLAMMATION OF THE CHEST, the presence of which is also notified by the existence of cough, is very important.

It is not necessary here to attempt any division into bronchitis, pleurisy, inflammation of the lungs, and so forth, for the all-sufficient reason that the treatment which non-professional persons have it in their power to adopt does not differ in any of these cases, and that the difficulty of discriminating each accurately would be insurmountable to them in the majority of instances.

Causes. Chills, the result of improper exposure, are the most constant causes of these attacks. Want of proper ventilation will do much as a predisposing cause. There is a special liability among those who have once suffered from a chest inflammation to a recurrence upon slight exposure. A child who once gets bronchitis is pretty sure during its childhood to suffer from a repetition of the ailment unless special precautions be adopted. Boys are more frequently attacked than girls, probably because they are more exposed. The

Exemption of young infants. age of a child has a great deal to say in the matter; strange though it appear, considering their extreme

delicacy, it is a fact that during the first two months of life, infants are singularly free from liability to these affections of the chest. Exposure of such young infants will tell upon the liver and bowels, and it will cause very severe "cold in the head," an affection to which they are peculiarly liable, but it will not usually cause a chest disease. Even up to three or four months there is lessened liability, but from this age till eighteen months the susceptibility increases, again to diminish as childhood advances. At teething periods, when the nervous excitability is at its height, children are particularly liable to chest inflammation if exposed. As a consequence of measles and some other fevers, chest affections may occur, and then generally in a most insidious and dangerous form.

Periods of greatest liability.

When from any cause there is reason to believe that the chest is affected, an examination into the points enumerated at p. 163 should be made without any undue exposure. This having been done, we proceed to consider the symptoms which notify such an occurrence.

Symptoms.

The child suffers from what is deemed to be an ordinary cold, perhaps for a day or two. But, instead of recovering, the cough becomes aggravated and distressing, the skin hot and dry, and the breathing hurried. A sucking infant will drop the nipple, cough more or less violently for a time, and make another futile attempt to suck. The heat of skin increases towards night, the breathing will probably be wheezing, and the little patient becomes restless, thirsty, and unable to sleep. As morning approaches, perhaps from sheer weariness, a little sleep is obtained; but, upon

CHAP. XXXIII. waking, the suffering from difficulty of breathing and coughing is much greater than before, owing to the accumulation of secretion in the air-tubes. After prolonged and exhausting efforts, which perhaps may induce vomiting, the passages are cleared and these symptoms subside. Expectoration is seldom observed, because children swallow it as soon as it reaches the mouth (a matter of no consequence); but if there has been vomiting, the ejected substance will be seen to contain much slimy mucus. In other cases, where the tubes are not so much engaged as the substance of the lung itself, we notice at this period very high fever with a dry, catching, painful cough; a flushed face; dilated nostril; panting respiration; and an unusually bright eye. The urine is thick, the bowels constipated, the tongue coated behind and red at the tip. As time passes the face becomes heavy, pale, and of an earthy tint. Notwithstanding that the restlessness is extreme and the child tosses from side to side, there are intervals of drowsiness. If after five or six days the symptoms do not become markedly alleviated, if there is a sunken, pallid, or livid face, with increased restlessness, rapid panting, or loud wheezing, the body being hot while the hands and feet remain cold, and if occasional cold, clammy perspirations break out, the case is progressing very unfavourably.

Symptoms of bad omen.

Symptoms of severe inflammation.

One severe form of chest inflammation commences with a short, sharp, shivering fit, followed by intense fever, hurried respiration, a short, dry, rapid cough, and vomiting. Sometimes in these cases convulsions occur at an early stage.

Chest inflammations which follow measles, &c., fre-

quently advance so gradually and insidiously as to escape detection. CHAP. XXXIII.

Distinction from head affections.

The fever, vomiting, and headache, with which a severe chest complaint is introduced, may sometimes be mistaken for some affection of the head, a suspicion which the occurrence of a convulsion would be held to confirm. It therefore behoves us to be able to discriminate between the two. The vomiting, restless nights, talking in the sleep, fever, and constipated bowels may originate the misconception; but in chest affections the vomiting is short and decisive, and nausea does not exist. In head affections nausea and irritability of the stomach are constant. The sudden rise of temperature when the lung is at fault, and the quickened breathing, uniform in its rapidity, not jerky, or only quick by starts, are sufficiently distinctive.

From croup.

It is hardly possible in ordinary cases to confound chest inflammation with croup: the paroxysms of the latter, the husky voice, and the crowing respirations ought to remove all doubt.

From whooping-cough.

Nor can the cough well be mistaken for that of whooping-cough with its characteristic whoop, its intervals of complete relief and absence of wheezing. The presence of wheezing, either heard or felt, will distinguish bronchitis from either of the two last-named affections.

Prospects.

Obviously if both lungs are affected, the danger is greatly increased. The temperature is a good guide as to the amount of danger present; a heat of 104° or 105°, if it continues for more than a day, is sufficient to occasion grave anxiety. An inflammation of the substance of the lung (pneumonia) is always a more

CHAP. XXXIII.

serious affair than inflammation of the lining of the air-tubes (bronchitis); but both conditions are often commingled. As an indication of seriousness, the following distinctions may therefore be noted :—

| PNEUMONIA. | BRONCHITIS. |
|---|---|
| 1. Temperature from 103° to 105°. | 1. Temperature seldom above 102°. |
| 2. Skin always hot and dry. | 2. Skin frequently moist. |
| 3. Tongue and lips bright red. | 3. Tongue and lips natural. |
| 4. Cough dry and hard. | 4. Cough loose and moist. |
| 5. Breathing difficult and rapid, but not wheezing or rattling. | 5. Breathing wheezing or rattling throughout. |
| 6. The affected side is dull on percussion. | 6 Absence of dulness. |

Pathology. In *bronchitis* the lining of the air-tubes is inflamed, and it pours forth additional mucus, the air still entering to some extent, and producing in its passage the wheezing or rattling sounds. It may affect only the larger tubes, and is then not nearly so serious as when it spreads to the smaller tubes. In *pneumonia* the substance of the lung is inflamed. The lung may then become solid like a piece of flesh, when it is, of course, unable to admit any air into the affected part. When recovery is taking place this solidity breaks down or dissolves, forming a thick matter which elder children will expectorate; and when this softening occurs, we have a rattling sound and a soft cough.

Treatment. The child, clothed in flannel, should be put to bed the moment it is discovered that its chest is affected.

Emetic. An emetic of ipecacuanha (39, 40) should then be administered. The affected side of the chest both before and behind is to be enveloped in a large, light

Poultices. bran poultice.

Medicine. The mixture No 36 (to which one drachm of antimonial wine may with advantage be added, in the case of a robust child) should at once be commenced, and if

it produces slight nausea so much the better; but should it occasion vomiting, the dose should be reduced to one-half. It may be necessary now to adopt measures to reduce the temperature as detailed in Chapter XVI. Complete rest to the patient, and surrounding quiet, are matters of much greater consequence than usually imagined. The room had better be slightly darkened, and as little conversation as possible held with the child. If there be marked pain at any one spot, and if with this there be much fever, it is an excellent plan to take three or four strips of sticking-plaster, each about 1½ inch broad, and sufficiently long to reach more than half-way round the body. Taking one of these, one end should be fixed to the skin two inches beyond the spine below the ribs; the strip is now to be pulled forcibly over the painful part, taking care to compress the ribs while this is being done, and the other end is to be secured in an upward direction two inches beyond the breast-bone. Similarly the other strips are to be fastened, each being made to overlap its neighbour by about a quarter of an inch. By this means the movements of the ribs of the affected side are restricted, and rest to the inflamed parts secured. The same end may be accomplished, though with the disadvantage of restricting the movement of the sound side also, by securing a broad bandage firmly round the chest from the level of the nipples or higher, to the lower margin of the ribs.

The room.

Prevent movement of the affected side of chest.

Should difficulty of breathing occasion annoyance, the ipecacuanha emetic (40) may with advantage be repeated,—indeed, it is well to do so if the secretion of mucus be copious, whether there be difficulty of breathing or not; and if the difficulty be accompanied

Difficult breathing to be met with emetics.

CHAP. XXXIII. with a dry, hacking cough, no wheezing, and with high fever, flour or linseed poultices with which mustard has been mixed, should be substituted for those of bran, and they should be frequently renewed, till the skin can no longer bear the irritant, when the chest should be wrapped in cotton wool secured by a flannel band. Blisters or mustard plasters should never be employed.

Stimulating poultices.

Over-poulticing a child and over-weighting it with heavy wraps do more harm than good by depressing the vitality, restricting the movements, impeding the respiration and diminishing its comfort.

Avoid over-heating the room.

Similarly the atmosphere of the sick room is too frequently oppressive and over-heated, converted into a sort of unwholesome steam-bath, in the dread of "fresh cold." In no class of cases is proper ventilation more essential than when the lungs are disabled. The struggle is for fresh air, and of this the patient is deprived through mistaken kindness.

Bowels.

The condition of the bowels is a matter not to be neglected. Constipation is usual; it should be relieved by castor oil (48) or some other appropriate medicine (50 or 54); but in the course of the disease diarrhœa is not uncommon, and should be met without undue delay, by an astringent (29, 31). The air of the room should be kept fresh, warm, and of an uniform temperature. The inhalation of steam is useful and allays irritation.

Ventilation.

Steam inhalation.

Sleeplessness.

Great caution must be observed in giving medicines to produce sleep. Opiates in any form are to be avoided, and chloral is equally dangerous. The writer agrees with Dr. Whitla that "sulphonal, given in a little whisky punch, is the best of all hypnotics" in a serious chest inflammation.

Diet and drink.

The diet should be very simple, consisting at first of mere slops. It is of more importance than may be thought that the child be permitted to drink bland fluids, such as barley water, toast water, milk and soda water, or even plain water, freely; whereby the skin may be induced to act, and the naturally scanty urine augmented. Milk and arrowroot is a good food at first, but the strength must not be allowed to run down, and soon beef tea and eggs should be added.

When stimulants are to be commenced.

After thirty-six hours, or less if the acute symptoms (high fever, hardness of cough, restlessness, and great thirst) have passed away, the depressing mixture should be discontinued, and No. 47 (2) substituted for it; or if the cough be the chief symptom, No. 47 (3) will answer the purpose better.

Food and medicine during convalescence.

At this stage stimulating liniments (18) employed with friction will do much good by loosening the phlegm and promoting absorption. After a rubbing the chest ought to be wrapped in cotton wool.

Now veal or chicken-broth, or beef-tea, and such like simple nutritious diet, should be adopted.

As the cough becomes loose and the fever slight, the child, though better, still being weak, the diet must be made more liberal; a little largely diluted wine may be given twice a day or oftener, with or after food, and the stimulant mixture (No. 65) used instead of the cough medicine.

Typhoid symptoms

Symptoms of a typhoid nature (p. 203, note) are always to be met with liberal stimulation, constant feeding, and great attention to all details of nursing.

Lance gums.

In every case the teeth must be examined, and any part of the gums requiring it should be freely lanced.

CHAP. XXXIII. During recovery tonics (68, 71) ought to be given.

Tonics.

## CHRONIC BRONCHITIS

Cause. Is generally the remains of an acute attack, and is more common in elder children, those from five upwards. The cough continues; it is soft and moist in its nature,

Symptoms. but at night it becomes distressing. The pulse is quick, there is a tendency to night sweats, the child remains emaciated, the face continues pale, the eyes hollow, and the lips are dry and cracked. The patient picks at his

Nature of expectoration. nose constantly. If old enough to expectorate, frothy white sticky mucus is spat up. These symptoms may go on for weeks if not checked, and may reduce the child to an alarming state of debility and emaciation. With care, however, a return to complete health may be looked for.

Treatment. An occasional emetic may be necessary to free the

To be of a stimulating nature throughout. tubes of mucus, but the general treatment must be of a stimulating and invigorating nature. When the weather permits it with absolute safety, the child should be sent out of doors; when in the house he should be kept out of draughts, and as much as possible confined to a well-ventilated room or rooms of equable temperature. The chest should be rubbed night and morning with the turpentine and camphor liniment (18), or with heated mustard oil till pimples appear. Wine should be given twice or three times a day with the meals, and a stimulating expectorant (47 [3]) prescribed; or a couple of drops of "pure terebene" (from the chemist) given on a lump of sugar three or four times a day, often greatly checks the secretion and promotes the expulsion of phlegm. By

every possible means the strength should be kept up by good food, without overloading the stomach. The addition of pepsine (74) to the food will be found greatly to aid nutrition and to increase the appetite. As soon as the child is able to eat fairly well, the mixture may be omitted, and the iodide of iron and cod liver oil (71) substituted for it. A change of climate is always calculated to be of great benefit.

## BREATHLESSNESS.

Asthma rare.

True asthma is very rare in childhood, but breathlessness, either more or less habitual, occurring paroxysmally, or dependent upon exertion, is not extremely infrequent. The subject is here only alluded to briefly to convey some information to guide parents.

Varieties.

Habitual breathlessness is most likely due to chronic bronchitis, or some allied lung affection, and should be treated as already directed.

Paroxysmal attacks of breathlessness may be due to child-crowing (p. 254), to the pressure of deeply-seated enlarged glands upon the windpipe, to the pressure of a foreign body in the windpipe (*see* Accidents), and occasionally to asthma.

When caused by exertion, the child being at ease when at rest, especially if there has been a previous attack of rheumatism, we may suspect the heart; but it must be recollected that exertion may excite paroxysms when there are enlarged glands pressing in the way mentioned.

Management.

The cases which are due to the pressure of glands should be treated with iodide of iron and cod liver oil, change of air, and great attention to food and hygiene.

CHAP. XXXIII. These measures will also prove useful in true asthma, but during the attack an emetic of ipecacuanha wine, the warm bath, and diluted mustard poultice to the chest, and the administration of a stimulating antispasmodic medicine (7) should be employed. If relief do not soon come, begin the iodide of potassium mixture (1), giving the first three doses at intervals of only two hours.

Children affected with asthma are coddled in a way which often inflicts permanent injury. They are swaddled up in an appalling amount of clothing, and restricted to the house except during very limited hours in fine weather. Believed to be "delicate," they are mal-treated from beginning to end, and compelled to be delicate. The true fact is that the nervous system is chiefly at fault, and our endeavour should be to build it up by invigorating surroundings and rational treatment. For this reason arsenic (3) is the best tonic to administer to such cases.

Heart cases. About heart affections in children, parents need not be nearly so apprehensive as is legitimate when the sufferer is an adult, but a physician alone can decide the nature and gravity of a case.

## CHAPTER XXXIV.

### WHOOPING-COUGH.



THIS is an infectious disorder, most common during childhood. A single attack protects the constitution for the rest of life, with few exceptions. About seven days is the period of incubation; and, according to Squire, six weeks should elapse before the child is permitted to mix with its healthy companions (p. 155). Isolation should be strictly enforced from the beginning, and especial care should be taken to remove all infants and very young children from the possible influence of the infection, as it is to them that the most serious results of the disease happen. Nature.

There is a tendency to ignore whooping-cough as being an unimportant affection: but as a matter of fact it is a serious and frequent complaint in India, and one of the most fatal diseases of childhood in England, —only convulsions, diarrhœa, scarlet fever, and inflammation of the lungs preceding it in fatality. Importance and frequency.

The affection is most common before the age of three; after five it is less frequent, and after ten it is rare. Strange to say, girls suffer more from it than boys. Frequently it occurs as an epidemic, and it is spread by contagion. Age of occurrence.

Whooping-cough commences as a common cold; with sneezing, running at the nose and eyes, tickling of the Symptoms.

CHAP. XXXIV. throat, and an irritating cough, together with slight feverishness. All these symptoms soon abate, except the cough, which becomes intensified, especially at night. Attacks of more or less severe spasmodic coughing succeed in a few days. Each attack consists of fitful spasmodic expirations, after which comes a loud crowing inspiration. During the attack, which may last from half a minute to two or three minutes, the face becomes purplish, and the veins of the head and neck swell out. Vomiting will probably succeed, and thereby a quantity of tenacious mucus is ejected. In the intervals between the attacks the child is comparatively well, and he will return to his play. Paroxysms are easily induced by emotions, such as anger, excitement, laughing, crying, or hasty eating or drinking. The vomiting, which will occasionally occur, is purely mechanical, for immediately afterwards the child will ask for more food. From the time the first whoop is heard it may be expected that the child will become worse for about a week, and the whoop will continue probably for from three to six weeks. It may be noted that in very young children the whoop is rather the exception than the rule.

The "fit" of coughing.

May be induced by emotions.

Duration.

Signs of decline.

The decline of the affection is notified by the lessened frequency and severity of the paroxysms. The whooping inspiration disappears, or occurs only seldom; the cough, however, remaining for two or three weeks longer. During the illness the child is pretty sure to become emaciated.

Complications.

The complication most to be dreaded is inflammation of the chest (p. 274). Convulsions occasionally follow a paroxysm; indeed, the over-distention of the brain with blood may sometimes, though rarely,

occasion inflammation of the brain. Bleeding of the nose is not infrequent. Crimson spots of blood effused into the white part of the eye, or the occurrence of a "black-eye," due to the straining, need occasion no alarm, and will soon disappear. Ulceration beneath the tongue due to scraping against the lower teeth during the paroxysms is a well-known complication. Collapse of the lung, due to the plugging of one of the air-tubes with tenacious mucus (p. 164) is a most formidable, usually a fatal occurrence.

Prospects.

When free from complications, whooping-cough is seldom fatal. High fever during the first stage is a warning of subsequent complications. Apathy and listlessness between the attacks, and persistent high fever are bad signs. Convulsions at any stage are of evil omen. From the number of paroxysms which occur each twenty-four hours an estimate may also be formed of the severity of the complaint;—twenty indicate a mild, thirty a tolerably severe, and over forty a grave attack of the disease. Lung and head complications are always dangerous.

Treatment.

Whooping-cough is one of those affections which will run its course. We know of no remedy which will cut short the disease, therefore our business is to guide the patient safely through it. In treating the affection we must recollect that we are not dealing with an inflammatory disease, but with a nervous complaint which expresses itself spasmodically. During the *first* stage, or that of ordinary cough and cold, which lasts eight or ten days, the fever mixture (36) will be useful; and, in addition, the ordinary precautions as to non-exposure, attention to the bowels and warmth of clothing, which will suggest themselves, are to be adopted; but

First stage.

CHAP. XXXIV. above all plenty of fresh air and air-space are needed. From the commencement the diet should be nourishing, though simple.

Second stage. During the *second* stage, or that of "whooping," we rely upon anti-spasmodic medicines to relieve the paroxysms; we endeavour to check the excessive secretion of mucus, to allay throat irritation, to keep the air-tubes as free as possible, and to support the patient's strength. To accomplish these objects the bromide of potassium (9), to which appropriate doses of the paregoric elixir (*see* Index) have been added, should be given when the paroxysms are severe, aided by one or two doses of the chloral mixture (8) daily. Alum, three grains in a little water every fourth hour, will act similarly, and it has the additional advantage of checking the secretion of phlegm. Very frequently it will be found a good plan to alternate these medicines, the one with the other, every few days, if continuous aid be necessary. Belladonna is a medicine which has been greatly praised for these cases. Children certainly bear this drug well, but the doses recommended are beyond non-professional responsibilities. Three or four drops of the tincture may, however, safely be given to a child of three with each dose of one of the other remedies. The application of the glycerine of tannic acid to the throat will be found useful in suppressing secretion and allaying irritation. The inhalation of carbolic acid vapour (20 drops to a pint of hot water) is decidedly useful, or spraying the throat with a two-per-cent. solution of salicylic acid effects the same purpose. Should mucus accumulate sufficiently to impede respiration, an emetic of ipecacuanha wine (40) is to be employed. Attacks of difficulty of breathing at night will be relieved by

the hot bath and mustard poultices to the top of the chest. Each day the chest and spine should be sponged with cold water, and afterwards rubbed with the turpentine and camphor liniment (18). Should there be wheezing between the paroxysms, a stimulating expectorant (47) may be used with advantage.

Outdoor exercise.

Gentle exercise in the open air, if the weather is sufficiently fine to admit of it, is not only allowable, but highly desirable. If this be not possible, the child should be changed from room to room several times a day.

Avoid excitement.

In every possible way, causes of mental excitement should be avoided.

Third stage.

During the *third* stage, or that of abatement, when we find subsiding spasm and loose expectoration, the emaciation and debility are best met by the employment of cod liver oil and iodide of iron (71). Alum is now particularly useful.

Complications.

Should a complication arise, whatever be its nature, be careful to abstain from anything like a lowering system of treatment or diet.

After consequences.

As in measles, but less frequently, whooping-cough is sometimes succeeded by a chronic state of bad health. Any fault inherent in the system is then likely to be developed. Such patients are especially liable to a form of indigestion characterised by occasional bilious attacks, when a quantity of slime is purged and vomited, and the child becomes pale and thin, and suffers from night terrors. Then for a time farinaceous and fermentable foods should be stopped, including sweets and most kinds of fruits. By this means, and the occasional use of a mild purgative, a cure will be effected; frequent vomiting being treated by an emetic.

## CHAPTER XXXV.

### CONSTIPATION.

CHAP. XXXV.

Frequent in India.

CONSTIPATION of the bowels of children is an extremely frequent condition in India, and it is one which is perhaps more often mismanaged than any other ailment, yet the treatment of these cases is both simple and rational. Like everything else in the world, it is necessary that we should understand something about it before we can interfere successfully; otherwise the too common notion of rushing to powerful purgatives for relief is apt to be accepted and acted upon—a very serious mistake indeed.

Significance.

The first fact which it is very desirable to bear in mind is this, that as diarrhœa always represents a danger, constipation is a condition which we can afford comparatively to ignore. It is seldom important, except when occurring as a symptom of head affections.

General symptoms.

Of the symptoms there need be little said. The bowels do not act with regularity. The motions are almost always too light in colour, because the solidity of the mass has not permitted the penetration of the bile. Sometimes the motions may be partially fluid, that is, we may have hard lumps ejected forcibly in the

midst of coloured water; the lumps having then acted as an irritant, and caused increased exudation from the intestine. Sometimes a thin flattened tape-like portion is evacuated, indicating that the bowel is still loaded, but that a narrow passage exists through or beside its hardened and stationary contents. There are no general symptoms; neither headache, feverishness, nor other such troubles arise. Not infrequently a few drops of blood may be passed at the end of a hard motion, but this need not occasion any alarm. It is due to the forcing having ruptured one of the very minute and delicate veins near the orifice, and it is not of the slightest consequence, being very different in significance from a dysenteric stool. CHAP. XXXV.

It is only by understanding the cause of a case of constipation that we can hope to treat it successfully. We therefore proceed to consider the causes and treatment together.

1. *In infants at the breast* constipation is common. The child is in good health, there is simply infrequency and hardness of the motions. During the first two months of life constipation is as common as diarrhœa is rare. The stools are more than usually white in colour: because being so hard, the bile and other colouring matters cannot penetrate them. In these cases the fault almost invariably is with the milk of the mother, who by reforming her ways, taking more exercise, and eating more vegetables, may generally effectually cure her child. It may be necessary to cause the mother to take an occasional seidlitz powder or a dose of Epsom salts. Sometimes, but very seldom, a small quantity of manna (about half a drachm) may be added to the child's 1 Infants at breast.

CHAP. XXXV.

bottle each day, in order to help to initiate natural regularity, but it should not be continued long. A piece of loaf sugar dissolved in tepid water given before meals sometimes suffices. It is even allowable to give fluid magnesia in teaspoonful or smaller doses for a few days, or two grains each of rhubarb and soda. Care should be taken that the exercise of the child itself (p. 114) be properly attended to.

2. Constipation of debility.

2. *The constipation of deficient tonicity,* that is, of weakness of the muscular coating of the bowel, is not infrequent in India among young children, whose general health has been impaired by climate. Sometimes it occurs as a sequence of fevers, the general debility involving the intestines as well as the muscles of the system generally. Children so affected are out of health, look pale, and probably their teething is rather backward. Everything must be done to improve the general health. The addition of oatmeal to the diet is desirable—a teaspoonful is rubbed up with a little milk to the consistence of cream, hot milk for the full meal is added, then boil for a few minutes. Epsom salts, or a combination of aloes and iron (58), used in conjunction with the above measures, will in most cases be found to be a specific. An agreeable mixture of the former is made as follows:—sulphate of magnesia, 2 drachms; ipecacuanha wine, 1 drachm; raspberry vinegar, 1½ ounce; water to complete to 3 ounces. Of this, two drachms are to be given twice or thrice daily. After a short time the dose of either may be reduced to one-half with equal effect, and finally it may be discontinued altogether. Frictions over the abdomen with an aloes and soap liniment (28), or occasional enemata of glycerine

(*see* Index) may be employed in addition to the foregoing, but generally this will not be found necessary, though it is very efficient. CHAP. XXXV.

3. *A sluggish action of the liver*, producing an insufficiency of bile, which is nature's purgative, may occasion constipation. This form is frequently the result of chill in a weakly child, and it is usually temporary in its nature. Possibly it may be accompanied with slight jaundice, nearly always there is languor and sleepiness, the appetite is gone, and the stools are clay-coloured and fetid. Warm clothing, frictions with mustard oil over the liver, the use of a flannel binder, a light diet, and the employment of podophyllin (57), followed, if need be, by Epsom salts as mentioned above (or 54), or aloes (58), till the bowels act regularly, will generally set matters right in a short time. Afterwards an acid tonic (a drop of dilute nitro-hydrochloric acid in a teaspoonful of infusion of chiretta for a dose) should be given for a short time. 3. Of sluggish liver caused by chill.

4. *Improper food* may occasion constipation as well as diarrhœa. In infancy, when the motions consist of hard white lumps, each lump being coated with slime, the cause usually is either that the milk has been given insufficiently diluted, or that farinaceous food has been too soon commenced, or wrongly prepared. Here the food proves to be an irritant; the irritation causes the intestine to throw out additional mucus (slime) to protect itself; this coats the half-digested mass and prevents its further digestion. By pressure the mass becomes harder, and its slimy surface is so slippery that the intestine fails to push it along. This condition is apt to alternate with one of semi-diarrhœa, the stools 4. Constipation of improper food. Frequent preliminary of diarrhœa.

CHAP. XXXV.

being partly hard lumps, partly greenish water, slimy and offensive; in fact, let irritation proceed a little further, and a state of active diarrhœa will be established. Manifestly a reform in the matter of diet, and conformity to the principles and rules already laid down, are called for; but it will be necessary to commence the treatment with an aperient; Gregory's powder (50) will answer admirably. The bowels having been evacuated of all offending matter, the proper regulation of the diet (Chap. IX.) will probably be all that is further required; but it may be found necessary to employ the red mixture (49) for a few days subsequently.

Treatment.

5. Constipation of elder children.

5. *Want of sufficient exercise, or of a sufficient variety in the food* may, in elder children, be an occasional cause of constipation. The bowels are not moved sufficiently frequently, and the stools are harder than they ought to be; otherwise there are no particular symptoms. Air, exercise, the use of oatmeal and brown bread, and an allowance of treacle, baked apples, stewed prunes, or ripe fruit, will generally suffice to restore healthy action of the bowels. If medicine is necessary let it be wholly vegetable, and of a tonic nature; for instance, senna-tea one-third part, and infusion of chiretta two-thirds, of which half a wineglassful or more may be given twice or three times a day (or 52).

General points. Enemata.

*Note.*—Simple enemata may always be employed with safety in any case of constipation. By such means, only the lower part of the bowel is emptied, but room is thus made for the progression of the contents of the upper gut. In using an injection great care should always be taken that the tube be well oiled, and that no force whatever be employed; and it is to be remem-

bered that the gut inclines slightly to the left side. CHAP. XXXV.
Glycerine for an enema is very effectual, and it acts immediately (*see* Index). It is an admirable aid to the formation of regular habits, a matter of considerable importance to be attended to. The careful intro- Suppository.
duction of the pawn stalk or pieces of soap is frequently very useful. Simple friction to or gentle Friction.
kneading of the belly is useful in most cases by helping to move onwards the contents of the bowel. A glass of cold water on rising each morning is a simple plan which not infrequently cures trifling cases. The Purgatives.
employment of purgatives, except when combined with tonics as above directed, is to be deprecated and the results will prove disappointing. Aromatics and car- Aromatics.
minatives (7) may always be given in moderation when there is flatulence (*see* Colic).

The compound liquorice powder is a good, portable, Other medi-
and nice occasional aperient, which is admissible in cines.
most cases. The extract of malt in teaspoonful doses often effectually cures constipation; and some obstinate cases yield to the continued use of pepsine (74), aided in the first instance by a dose or two of a mild aperient. The sulphur lozenges of the Pharmacopœia (one, two, or three, according to age) is an aperient suitable in cases where only gentle assistance is required.

There is a form of constipation due to OBSTRUCTION Obstruction
OF THE BOWEL, characterised by paroxysmal pain over of the bowels.
the abdomen, vomiting of bile at first, and afterwards of the contents of the bowel. There is also hiccough, a distended belly, a dry tongue, rapid pulse, feverish- Is serious.
ness, and great prostration. Of course this is a very serious matter. Possibly at first mild purgatives may

CHAP. XXXV. have been tried, and no great harm resulted; but as the nature of the case becomes more evident it would be wrong and hurtful to push or use strong aperients.

Management. The persevering employment of large enemata (No. 44, to which ¼ to ½ pint of warm water has been added) at short intervals till the mass is broken up or voided may effect the desired relief; and one or two moderate doses of laudanum (the total not to exceed one drop in 24 hours for each year of age) is likely to assist materially and save much pain; but a surgeon should be summoned without delay.

There are other causes of obstruction besides an accumulation of hardened fœces, such as twisting of the bowel, the formation of bands, &c., but an experienced surgeon is required to deal with such cases, and the parent must be content with the above measures pending his arrival.

The food should be of such a nature that it will be absorbed without adding to the accumulation, such as the juice of raw meat (6), or beef-tea (5), or the brandy and egg mixture (10) when exhaustion has become great, and all food is to be given only in small quantities, but frequently.

Peritonitis. Obstruction of the bowel might be confounded with PERITONITIS, or inflammation of the lining membrane of the abdomen and covering of the intestines, a condition which may result from injuries such as a fall or blow, or from chills. It is true that the resemblance is often very close, so much so as to make it advisable not to attempt the distinction here. In both we find localised abdominal pain and tenderness, constipation and vomiting, often with a variable amount of fever. But

by taking the general rule that all cases of obstruction, whether due to peritonitis or other conditions, call for the *moderate* use of opium and the avoidance of purgation, feeding as above and poultices to the abdomen, the parent will be on safe ground, and can do no more. The only point of difference in the management of either case is that the free use of enemata is useful in obstruction, and rather the reverse in peritonitis. Either condition is serious, and calls for the presence of a responsible person.

CHAP. XXXV.
General rule.

## CHAPTER XXXVI.

### DIARRHŒA.

CHAP. XXXVI.

Frequently mismanaged.

WE now come to speak of an affection the existence of which is at once recognised even by the most unskilled, but which nevertheless is in a great number of cases popularly mismanaged. That there is an unnatural flux is self-evident, and with this knowledge occurs but the single prevailing idea—the use of astringents.

The prevailing idea,—to rush to astringents.

Now it cannot be too clearly understood that this notion may often prove to be a disastrous one. Astringents exclusively will, oftener than not, aggravate the complaint, or very possibly convert an easily-managed diarrhœa into a severe inflammatory affection; but, on the other hand, it is sometimes desirable to employ astringents at once and with energy.

Dangers of the notion.

Seriousness.

A state of diarrhœa is one the existence of which we should never ignore; it always represents a danger.

Frequency.

Mortality.

It is the most fatal of all the diseases with which the young child has to contend in India. Even in England diarrhœa ranks third as a cause of the deaths of children under five years of age.

Never to be ignored.

Let it be a maxim that children's diarrhœa in India should always be checked, whatever be its nature or whenever it occurs. Heed not the advice to allow

diarrhœa to progress while teething is going on. Firmly take your stand, and act upon the opposite principle; more particularly in the case of chronic diarrhœa, that form of the disorder in which temporizing is popularly most commended. It is not desirable to induce actual constipation when dentition is in progress; but do not for a moment believe that constipation, even during teething, is the fatal thing it is represented to be, or that it is a state fraught with all the dangers of convulsions. It is through diarrhœa rather than constipation that we court convulsions when the child is teething.

Even in "teething."

Constipation accused of the dangers of diarrhœa.

Diarrhœa may be produced by almost innumerable causes, of which, no doubt, (1) errors in diet are by far the most frequent. (2) Dentition is popularly supposed to be a very prolific cause, but I believe the assertion to be far from the fact. No doubt diarrhœa is most common between the ages of six months and two years, that is, within the period of active dentition; but the intestines are, at the same time, undergoing a stage of development which renders them peculiarly intolerant of irritation. The susceptibility is, it is true, greater; and in delicate children, dentition may accelerate a diarrhœa, but it is a natural process, which does not give rise to disease in the healthy. (3) Atmospheric conditions, such as the damp and cold of the rains and sudden vicissitudes, as undoubted causes, may affect the child itself directly, or indirectly through its food.

Causes.

Mr. Turner, of Portsmouth, writes:—"Given a certain percentage of infants in a town who receive other nourishment than breast-milk, the annual state of the town being the same, the mortality from diarrhœa will be entirely ruled by meteorological conditions. . . . . It is not so much the effect of the temperature on the infant itself which influences the mortality—

CHAP. XXXVI. indeed, it is very rarely fatal to the child nourished upon human milk; but it is the influence of the temperature on the child's food which determines in the highest degree the number of deaths."

(4) A polluted air, such as may be caused by want of drainage, malaria, foul surfaces, or water-closets, is another cause. (5) Worms are an occasional cause.

The treatment to be based upon the nature of the evacuation.

The causes chiefly affect the question of diarrhœa as indicating the proper measures for prevention; but so far as treatment is concerned, adhering to the practical view of the matter, it is rather by the nature of the stools and symptoms, indicating as they do faithfully the internal condition of the intestine (p. 160), that we must be guided. Even if it were otherwise, the cause is often difficult of discovery. It is all very well to talk of "removing the cause," but it is often very impracticable advice.

Acute and chronic.

In the first place we divide diarrhœa into the *acute* and the *chronic* forms, using these terms as they are popularly understood.

### (1) Acute Diarrhœa.

Acute diarrhœa occurs in five very distinct and very easily recognised varieties, each requiring a different kind of treatment. It becomes, therefore, a matter of importance to be able to discriminate correctly between them; but, as stated, there is not the slightest difficulty in doing so. The simplest practical classification is—

Varieties.

1. Simple diarrhœa, which is merely ordinary relaxation of the bowels.

2. The curdy diarrhœa of irritation, in which there are frequent undigested and acid motions.

3. Fetid diarrhœa.

4. Violent watery diarrhœa.

5. Inflammatory or febrile diarrhœa, with which may be classed dysentery.

1. Simple.

1. *Simple diarrhœa* may be due to a variety of causes, improper food being perhaps the most frequent.

Symptoms.

The ordinary motions are thin and numerous; their colour is either natural or nearly so. There may be vomiting at the commencement, and possibly griping. The negative symptoms and appearances are, however, just as important; there is no fever (unless the diarrhœa be a mere symptom of a fever), the motions are not scanty, nor are they like curd or pap thrown into discoloured water; they are not acid to litmus paper, and they do not consist almost wholly of greenish water.

Treatment.

There is nothing formidable about this kind of diarrhœa, which will yield rapidly to the following treatment:— In the first instance a dose of castor oil (48), or, better still, of Gregory's powder (50), should be given. The diet should be spare and very simple, no meat or vegetables being allowed. With younger children it is just as well to leave off milk for a short time, and to give chicken broth instead for a day or two. If the child be teething, the gums may be examined, and any tooth distinctly pressing should be set free with the gum lancet. Warmth is very essential, particularly over the abdomen, in this as in all forms of diarrhœa; indeed, without it other means will often go for nothing. Confinement to the house and restriction of exercise should be adopted. This simple plan is sufficient to cure the majority of cases.

If, however, the diarrhœa still continue, an astringent should be employed. Catechu with an aromatic,

CHAP. XXXVI.

or catechu and chalk (29), will be found to answer the purpose admirably. The precautions mentioned should be continued for a couple of days after a cure has been effected.

2. Curdy. Symptoms and nature of stools.

2. *The curdy diarrhœa of irritation* is more important. The food is quickly passed, nearly unchanged, through the bowels. The motions are curdy, as though bread-pap had been thrown in amongst them, and they are sour. Vomiting is common, and griping not infrequent. The contents of the bowel are hurried along before they can come fully into contact with all the secretions, and therefore they are expelled in a state of semi-digestion.

Information thus gained.

The nature of these stools informs us that there is great irritation (whether arising from exposure to cold, improper diet, &c., being of no consequence), causing the intestines to work with undue energy; and the absence of fever tells us that there is no inflammation.

Treatment.

This much being understood, the treatment becomes apparent. First of all it is necessary to get rid of all the irritating curdy contents* of the bowel, and then we have to assuage the irritation of the intestine which produces its over-action. To accomplish the first of these indications we employ, as in the former case, either castor oil or Gregory's powder; but we must not stop here. It is necessary to maintain a gentle purgation by means of the red mixture (49) for from twelve to twenty-four hours. At the same time we must be most careful to avoid giving anything but

Remove irritation by purgatives.

* Through imperfection in digestion they have become "irritating," even though the food given may not have deserved to be so classed.

the simplest and most easily-digested food, and that too of a fluid nature for the most part. The second indication is fulfilled by employing opium, alkalies, and carminatives. But it is a critical thing to use opium in the case of children. If the child be under one year of age the paregoric elixir is the best means of administering opium. The following prescription will meet all requirements:—

Soothe the irritated parts by opium.

Paregoric elixir—two drachms.

Bicarbonate of soda—one and a half drachm.

Caraway water—two ounces.

To this a little essence of ginger may be added. Of the mixture, one teaspoonful should be given three times a day, but not oftener. In the case of an older child more benefit will be derived from the use of prescription No. 31. Improvement will very soon result, and when the evacuations have become free from acidity as tested by litmus paper, and quite natural in appearance, except that they be too loose, a simple astringent (29) may be ventured upon, but not sooner.

Then stop discharge by astringent.

All the precautions as to diet, &c., mentioned as being necessary to the treatment of chronic diarrhœa are here imperatively called for.

3. *Fetid diarrhœa* is not infrequent in the warm weather, occurring generally between weaning and the fourth year of age. Its characteristic symptom is horrible offensiveness of loose, perhaps watery, muddy-coloured, copious motions of gritty appearance. Rapid putrefaction has taken place within the bowel, and severe irritation or inflammation may follow neglect or improper management. Astringents would of course do a great deal of harm, nor does change of diet alone seem

3. Fetid.

Nature.

CHAP. XXXVI. Treatment.

to effect much good. The cause of the decomposition is located within the intestine, and our object must be to disinfect the contents as speedily as possible. Mere removal by purgatives will not accomplish a speedy cure, the germs of the decomposition are not thus removed, and they contaminate the next supply of nutriment which enters; but in the absence of the proper medicines it is best to employ rhubarb in purgative doses in the shape of Gregory's powder frequently repeated. The following prescription is one which will be found very useful:—Bismuth, thirty grains, and salicin, twelve grains, mixed together, are divided into six powders, one of which is to be given every second hour to a child a year old. Dr. Braithwaite lays down a treatment which is very successful. He disinfects the contents of the bowel by means of the following mixture, which is suitable for a child two years old:—

Sulphate of iron, twenty grains.
Salicylate of soda, twenty grains.
Glycerine, three drachms.
Water, sufficient to make the whole three ounces.

(The iron and soda are to be dissolved separately in some of the water and the solutions mixed.) Of this port-wine coloured mixture, a teaspoonful is to be given every hour till the motions become blackened, which happens in about twenty-four hours; or a larger dose may be administered at longer intervals. The medicine should then be given every three or four hours, and an occasional small dose of castor oil administered. This mixture has given the writer great satisfaction.

4. Watery.

4. *Violent watery diarrhœa* is, fortunately, not very

common. From six months to two years of age is the most usual period of occurrence. The onset is sudden, and often accompanied with vomiting. Frequent copious motions, which seem to consist almost altogether of greenish-coloured or almost colourless water, are voided. The hands and feet become cold, the face pale, shrunken, and wizened, and the lips thin. In a few hours, in a very severe case, the child will have all the appearance of an aged person. A most important characteristic symptom is the inability of the child to sleep, or even to rest; he moans, frequently shrieks, and is never quiet a moment (Chap. XLIV.). The exhaustion is so rapid, by the draining away of the fluids, that a convulsion is very likely to ensue if treatment be not strenuously adopted.

Symptoms alarming and sudden.

Obviously here there is not a moment to be lost.

The objects of treatment are (1) to stop the purging, (2) to allay nervous irritability, and (3) to sustain the vital powers. (1) To check the purging we use gallic acid (30), or catechu and sulphuric acid (32), to the first dose of which (the first *only*) one drop of laudanum for every year of age the child has *completed* should be added, none being given if the patient is under one year of age. The mixture should then, without any more opium, be administered after every motion till the purging has ceased; or has become so checked as to be no longer dangerous. (2) To soothe the nervous system is a matter not one degree of less importance; and it is accomplished by the bromide of potassium (9), which should be given every hour in conjunction with the acid mixture, till sound sleep is procured. (3) The strongest jugged soup, the juice of

Objects of treatment.

CHAP. XXXVI.

raw meat, and white wine whey, or the brandy and egg mixture (*see* Receipts) must be given at short intervals, and in small quantities at a time.

Order of treatment.

Briefly, the order of treatment will be as follows: Commence by placing the child for five minutes in a warm mustard bath. Upon removal therefrom, give a dose of the astringent with the opium added, and if this be rejected administer half the proper dose of opium on a little sugar. Soon afterwards commence the bromide, and proceed as directed; but if great restlessness occur at any time, give a dose of No. 8 once or twice. Should the astringent cause vomiting, it will be better to omit it altogether for a time, trusting to the sedatives and stimulation with proper food as being the more important part of the treatment.*

Constipation may ensue.

Very likely constipation will succeed this attack. If so, do not meddle with it, but rest satisfied with a restriction to the simplest diet as the only further treatment necessary; but it will be a mistake to introduce milk or even farinaceous foods too soon.

* Dr. Luff (*Lancet*, December, 1890) has obtained most satisfactory results in cases of English cholera from the following prescription (potassio-mercuric iodide), which is here mentioned more as a suggestion to medical than a direction to lay readers, and as being calculated to be of much benefit in these and the last described class of cases, because it contains both antiseptic and sedative agents.

Solution of perchloride of mercury, twelve drops.
Iodide of potassium, three-quarters of a grain.
Hydrate of chloral, one grain.
Water to one drachm.

This dose to be given every four hours to infants up to six months, and the dose to be doubled for children of more than one year. Probably half the above dose might be sufficient after the administration of one full dose, but the prescription is not one for amateur preparation.

## CHAPTER XXXVII.

### (5) INFLAMMATORY DIARRHŒA AND DYSENTERY.



Importance of early attention.

WHEN properly treated in the earlier stages, this is one of the most manageable of all illnesses, but if allowed to become chronic it is always serious, and sometimes formidable.

Nature.

Here we have an inflammation commencing either in the mucous lining or glands of the bowel, the symptoms varying according to the part of the intestine attacked. The danger is that ulceration or sloughing should happen.

Propagation.

The modes of propagation and the prevention of these forms of bowel complaint have already been discussed (pp. 70, 150). It should ever be remembered that the effluvium from dysenteric stools may propagate the disease, wherefore it should be a strict rule to remove all such from the house immediately, and it is a good plan also to disinfect the motions (p. 146) as soon as passed.

Prospects.

As to the prospects of a case, all depends upon the stage at which treatment has been commenced. If ulceration has had time to become firmly established, the case is always critical. If it be otherwise, a rapid recovery, under proper treatment, may with confidence be predicted. Real dysentery is extremely rare during early childhood.

Symptoms.

An attack is accompanied by some fever, and it may commence in one of two ways—either as a violent fluid

CHAP. XXXVII.

purging, at first of a curdy nature, or as a griping diarrhœa with straining and scanty motions. In the first kind the evacuations soon become much less copious, but more or less slimy and tinged with blood, while curdy substances float upon the surface, the symptoms merging into those of the second kind. In either case the child looks pale and worn, but his attention is easily attracted. He is thirsty and languid, and the tongue, which was at first moist, soon becomes red and dry. The bowels act with increasing frequency, but with diminishing results, till after a time almost nothing but bloody slime is voided, and that with great pain and straining. Ordinary fæcal matter is either absent altogether or almost entirely so. Shreddy mucus and blood compose, or nearly compose, the whole stool, which has a very peculiar fetid sickly odour. Pressure over the lower part of the belly may cause pain. The amount of straining is in proportion to the proximity of the mischief to the lower end of the intestine, and the griping and abdominal pain bear a ratio to the intensity of the disease. Improvement is first intimated by the reappearance of fæcal matter in the stools, and by marked mitigation of the straining and pain.

Treatment.

It is of great importance to treat these cases judiciously from the beginning. The too early employment

Caution.

of astringents is the serious mistake most commonly made. This class of drugs only increase the inflammation, by confining the acrid secretions within the intestine, where they undergo decomposition, distending the belly with gas and producing great pain and misery.

We must commence our treatment by clearing out the bowels of all offending matter, for which purpose

Castor oil.

castor oil is to be preferred; and then preventing the

further ingress of food not capable of ready absorption, by accurately following the directions as to diet which are laid down for chronic diarrhœa (which see). Particular attention should be given to preserving the warmth of the abdomen by using the flannel binder constantly. Sufficient time having elapsed to allow of the action of the purgative, an interval of marked relief is sure to succeed. This is the period for the next step, which is to administer perseveringly the castor oil emulsion (51), a medicine which, simple though it be, is nothing short of a specific when properly used, that is, *persistently, in very small doses and frequently repeated.* This is really the secret of success. (Castor oil alone will not succeed; it must be emulsified.) Half a teaspoonful every second hour, lengthening the interval as improvement manifests itself, is the usual dose, and the medicine should be continued for days. It is indeed rarely that a case will resist this treatment, of which it is impossible to speak too highly. In a couple of days or less the motions will lose their slimy, bloody, and curdy appearance, and only a little looseness remaining, the case is resolved into one of the simplest form of diarrhœa, which may need a dose or two of bismuth (31), or of an astringent (29), though the parent should be reluctant to employ these drugs at all, for the reasons above given. I have found the extract of koorchi, made by Smith, Stanistreet & Co., of Calcutta, very valuable in the latter stages of the so-called dysentery of children, after the castor oil has relieved the bowel of its irritant contents. The dose for a child of six is 2 grains twice or three times a day.

Diet.

Abdominal warmth.

Emulsion.

The oxide of zinc (34) is another remedy of value. After the operation of the first dose of castor oil, two

Oxide of zinc.

CHAP. XXXVII. grains may be given three or four times a day with a little aromatic powder to a child a year old.

Ipecacuanha. With these two drugs properly used and properly supported by an efficient diet, it will almost never be necessary to resort to ipecacuanha, a drug which children tolerate very badly. If given at all, such small doses have to be adopted that its physiological effect can scarcely be hoped for. One-tenth to one-eighth of a grain in water and mucilage with a few grains of aromatic chalk powder will be as much as a child will bear at each dose, which should be repeated as often as possible without inducing vomiting. Ipecacuanha, when resorted to, should be given at as great a distance from meals as possible, and it is a good plan to administer a single dose of laudanum (a drop for each year of age) once a day while the child is taking the drug, the largest possible dose (as much as four to six grains may with these precautions be sometimes retained) being given about an hour after the laudanum, also selecting, if possible, the time when the child usually sleeps. If the drug is retained for an hour or more it will have had time to affect the system. The necessary use of laudanum is an objection to the ipecacuanha treatment; however, again I repeat that it is very seldom necessary to resort to it for any of the bowel complaints of children.* Certain native drugs are fair substitutes for ipecacuanha (*see* Emetics).

* It must not be thought from these remarks that the writer undervalues ipecacuanha in the treatment of dysentery. Here the so-called dysentery of children is the subject and not the specific dysentery of elder people, for which ipecacuanha is invaluable. The child is incapable of exerting that self-control which is essential to the retention of ipecacuanha. Two doses daily suffice.

The enema is too uncertain a means of introducing ipecacuanha into the system, but it sometimes acts favourably, and may be tried under circumstances of difficulty as regards other drugs. Ipecacuanha enema.

Turpentine stupes (*see* Index) to the abdomen, in the event of much pain, will be found to produce wonderful relief. Stupes.

When the stools have become fæculent and quite destitute of blood, mucus, or slime, the chalk mixture with catechu (29) may be used to moderate the remaining looseness; but there should be no hurry in resorting to the astringents. While a diarrhœa is accompanied by a high temperature, the use of astringents is generally useless or hurtful. Astringents to be used cautiously.

Tonics (66, and afterwards 68) will perfect the cure. Tonics and pepsine.

Pepsine (74) should be used for some time subsequently, to assist the weakened digestion.

In the event of excessive straining occurring throughout the course of the illness, an enema of tepid water, and the administration of a very small dose of castor oil by the mouth at the same time, will with great certainty afford complete relief from this distressing symptom. Repeated copious enemata of tepid water are highly lauded by many authorities. Such "irrigation" of the diseased part of the bowel is beyond doubt very useful and never hurtful. It may always be employed as a valuable auxiliary. Straining.

In all cases of dysentery, Bael fruit (33) may be freely used throughout, when all inflammatory symptoms have ceased, and it may most conveniently be administered in the form of a demulcent drink. Bael.

# CHAPTER XXXVIII.

## CHRONIC DIARRHŒA.

## INFLAMMATION WITHIN THE ABDOMEN.

CH. XXXVIII.

Very serious in young children.

WHEN chronic diarrhœa becomes firmly established during the first two years of life, it is difficult of arrest. Even when checked, a long time is required to restore the intestines to proper working order. In older children it is less serious and more easily managed.

Symptoms.

The case may have commenced in many ways: when firmly established the child becomes thin and pale, but he is tolerably lively, and he takes his food fairly well. The motions, of a pale colour and a putty-like consistence, are voided four or five times a day or oftener, with pain and straining. As time passes, the child's condition will vary; sometimes he is much better for a day or so, sometimes he is worse. On the whole things do not go on satisfactorily, and the motions gradually become more frequent; at times they may be like mere dirty water, and then again they may change to a mud-like substance. The child wastes, he becomes paler, and the skin assumes an earthy tint. He lolls about, lying down frequently, and he soon wears the aspect of an old man if things continue to go on badly.

The motions

The motions may now become like chopped spinach and contain much slime, and sometimes a few drops

of blood, due to the straining. If recovery is to take place the first intimation of improvement will be the appearance of bile in the motions, which, as the bile increases, will become less offensive.

Bile in stool, the first sign of improvement.

In the chronic diarrhœa of children the temperature should be accurately measured by the thermometer for a few days. If the temperature be above that of health, and it remain so day after day, we may fear some fixed disease has become established. If the contrary is the case, the temperature being at or a little below the standard of health, a more hopeful view is justified.

Value of the thermometer.

Chronic diarrhœa is always serious, and the more so the younger the child. When it occurs as a sequel to other affections, as measles, scarlatina, &c., the case is anxious. The thicker the stools the more hopeful the case, no matter how offensive the motions may be. It is always a favourable sign if dentition continue to proceed naturally; if a great impression has been made upon the constitution, teething will be suspended.

Prospects.

In the treatment of this affection scrupulous attention to hygienic conditions is a matter of the greatest importance, beside which drug-giving is quite a secondary consideration. An equable temperature, free ventilation night and day, warm flannel clothing, especially around the abdomen, and very careful regulation of the diet, all of which matters have been previously discussed, are to be carefully attended to. If the child be very young, the quantity of milk should either be greatly restricted or milk should be altogether excluded from the dietary and in its place non-fermentable foods substituted, such as chicken broth, whey with cream, and barley water. Large quantities of food should never be given at once

Treatment.

The food.

CH. XXXVIII. the more severe the purging, the smaller and more frequent should be the amount of food given. Copious drinks should be forbidden. Even for older children, those nearly a year old, only very small quantities of farinaceous foods are allowable, but we may use any one of the intermediate class of foods with greater safety; and it may be mixed with whey or barley water, milk being almost or altogether excluded from the diet. Children who are still older should not be allowed to touch such easily fermentable articles as potatoes, sweet biscuits, and farinaceous matter generally, sugar, jams, &c.; but toasted bread with milk, fresh broths, a little fresh meat, green boiled vegetables, and custard pudding may be allowed. White wine whey is useful where there is exhaustion, or for older children we may then use the brandy and egg mixture. (Eustace Smith.) Raw meat juice is another very useful article of diet in these cases, or we may use the raw meat itself (*see* receipt 7).

Peptonised milk. In pancreatised milk (receipt 9) we have lately been furnished with a most valuable and safe means of nourishing these cases. An endeavour should always be made to induce the child to accept it.

Lime water. Marked improvement sometimes follows the omission of lime water from the food of infants, and the substitution for it of the gelatine solution (receipt 4). The lime water occasionally seems to irritate the mucous membrane.

Baths. Great benefit will always be derived from the daily, or more frequent, use of the hot bath, followed by an inunction of oil; or the mustard bath may be employed when dealing with the exhaustion of older children.

Abdominal griping and tenderness will be greatly relieved by poultices to which mustard has been added, or by turpentine fomentations. Mustard poultices.

If the case be seen sufficiently early the stools will possess all the characteristics of those of the curdy diarrhœa of irritation (p. 302); and the symptoms, too, will be much the same, except that they are of a chronic nature. We then commence treatment as before, with Gregory's powder (50), and a short course of the red mixture (49), followed by bismuth and opium (31) for a few days only. As improvement takes place, the latter medicine may be omitted and Bael fruit (33) used instead. Medicines. If seen early.

Should, however, the looseness, now reduced to simple diarrhœa, still continue, we must resort to pure astringents (29).

If, on the other hand, the motions have already become scanty, shreddy, of very offensive odour, and contain blood, we must avoid astringents, and use the castor oil emulsion (51) with aromatics, such as powdered cinnamon and caraway, persistently until the symptoms yield: an astringent not being substituted until the tongue has become clean, and the motions reduced, for some days, to the nature of those of a simple diarrhœa. The oxide of zinc (34) often answers admirably, sometimes even better than the emulsion, in these circumstances. Astringents should be absolutely avoided so long as the temperature of the body is high. When signs of inflammation appear.

When the motions are large, fermented and putty-like, a bismuth (5 grains) and salicin (2 grains) powder after every meal will be found most useful; while, at the same time, an occasional dose of No. 7 (*b*) may with advantage be given. Fermented motions.

CH. XXXVIII.

A cure having been effected, the greatest precautions as to diet, clothing, exercise, &c., must be adopted for some time, a relapse being very easily induced.

Medicine in convalescence.

During the period of convalescence, iron in the form of the "*Liquor Ferri Pernitratis*," as obtainable from the druggist, in doses of five drops three times a day, in half a wineglassful of water, after food, is a valuable medicine for elder children.

Pepsine always.

In all cases of chronic diarrhœa, the pepsine wine or powder (74) ought to be added to the food a short time before its consumption.

Medicines not to be hastily used.

Finally, I would recommend the dietetic plan, together with the use of pepsine, or pancreatised milk, to be tried fairly before having recourse to medicine.

Recovery gradual.

A sudden improvement should not be expected to follow treatment. That any degree of amendment is daily observable ought to satisfy the most sanguine. The mischief which weeks of disease has accomplished cannot be remedied without time.

## INFLAMMATION WITHIN THE ABDOMEN.

Description.

By this it is intended to signify the inflammations known as peritonitis, typhilitis, &c. We have pain, tenderness, and swelling (either local or general) of the abdomen, with constipation and vomiting, and usually, but not always at the early stage, fever. The painful condition of the abdomen is the predominant symptom; it cannot fail to attract early attention, and give the clue to the nature of the case. If the pain and swelling be localised, they will probably be discovered usually just above the right groin, and the patient will

lie on his back with the leg of that side drawn up: any attempt to straighten it is attended with severe pain. CH. XXXVIII.

These cases are mentioned here chiefly with the object of preventing the parent mistaking them for instances of constipation (under which heading allusion has been made to this point), and committing the error of treating them accordingly. Purgatives should not be administered; they would do harm. Professional aid should be summoned. The parent herself can only adopt a treatment of absolute rest, a scanty fluid diet of strong soups and diluted milk, with perhaps the yolk of a raw egg beaten up with the latter, poulticing the abdomen with bran, and the administration of small doses of opium (*see* Opium), either as Dover's powder or laudanum, just sufficient to create a slight degree of drowsiness and relieve the pain. If, however, all these measures be carried out, it means that a great deal has been done. Management.

Very frequently it will be found that some accident, such as a fall or a blow, has been the cause of the inflammation, but chills may also produce it.

## CHAPTER XXXIX.

### PROTRUSION OF THE BOWEL.

#### COLIC AND FLATULENCE.

CHAP. XXXIX.

Causes.

IN long-continued bowel complaints, and indeed sometimes without such disease, in delicate children, the bowel may protrude from the fundament at each evacuation. Habitual constipation in weakly children who are allowed to strain much at stool is another cause, and the irritation of worms is not infrequently associated with prolapse.

Recognition.

The condition cannot be mistaken when observed, and it is not likely to remain long concealed, in consequence of the pain occasioned by it. The inverted gut will be seen to protrude as a purplish-red, thick ring, from the fundament.

Importance.

There exists no cause for alarm. Reduction may be readily effected, and complete relief thus given. On the other hand, to allow the protrusion to remain unreduced for any length of time would be to incur a risk, because the pressure of the edge of the fundament might strangle it and cause mortification.

How to reduce it.

Having thoroughly lubricated the surface with sweet oil, the protrusion, protected by a handkerchief, should be grasped with the points of the fingers, steadily squeezed for about half a minute to empty it of blood, and then pressed towards the body. After a few

moments of such pressure, the prolapse will slip out of sight. The child should be kept lying down for some time subsequently.

Recurrence.

Should the protrusion recur, it will be well, before the oiling and reduction, to sop the parts with a solution of alum (a large teaspoonful to a pint of water will answer); or to smear the exposed surface with galls ointment (19), which, however, is open to the objection that it causes a little smarting.

Prevention.

Prevention is the proper treatment. The constipation, the diarrhœa, or the debility being removed, and the general health re-established, the accident will cease to happen. But to accomplish this end, time is required. In the meanwhile the child should not be permitted to sit long at stool; indeed, it may be necessary to prohibit the sitting posture wholly, the patient being taught to evacuate his motions upon a napkin or sheet placed under him.

Other measures.

In addition to the above measures, in a case of persistent protrusion, a couple of ounces of cold water in which six or eight grains of sulphate of iron (obtainable in the bazaar as Heera-Kusees) have been dissolved, should be injected into the bowel, twice a day; and the solution of pernitrate of iron (p. 316) administered internally.

## Colic and Flatulence.

Really a symptom.

This condition is more of the nature of a symptom than a sickness. It consists of a spasmodic pain or griping of the intestine. When an infant screams and draws up its legs, and is free from fever, the hands and feet being rather cold than otherwise, it is probably griped or affected with colic. The stomach

CHAP. XXXIX. is usually distended and hard—possibly there may be vomiting, and a greenish motion or two may be passed.

Causes. Flatulence with or without colic is one of the commonest accompaniments of indigestion, due to excess of food or errors in the diet of the infant, or to some indiscretion on the part of a nursing mother. The gases evolved from the undigested food distend the intestine and produce pain.

Treatment. The first thing to be done in such a case is to administer ten drops of the sweet spirits of nitre in a teaspoonful of caraway or aniseed water; or to give a dose of prescription 7. In a few minutes an eructation of wind will follow this draught, the flow of urine after a short time will be increased, and the distress will cease temporarily. A dose of castor oil (48), or a stronger aperient (56) if there is constipation, and an emetic if there is sickness, should then be given. Either of these medicines had better be aided in their action by an asafœtida enema (45). The warm bath, followed by bran poultices to the stomach, will much aid in hastening relief. Should these means not give complete relief, a mixture composed of forty grains of bicarbonate of soda, half a drachm of sal volatile, and two ounces of caraway water should be made, and two teaspoonfuls of it given every second hour.

Diet. So much having been accomplished, we should set about rectifying the diet, which, in any case, for a few days following, should be of the simplest nature (p. 97 *et seq.*).

## CHAPTER XL.

### CHOLERA.



Age.

This terrible disease is very unusual among children under one year of age, but as the child grows older the liability to cholera gradually increases (p. 132).

Causes, &c.

Concerning the mode of origin of cholera, the means of prevention and disinfection, the reader is referred to page 144.

Symptoms.

There may be some premonitory diarrhœa. Soon, vomiting and purging of a material closely resembling rice-water in appearance, supervenes. The vomiting varies greatly in its intensity in different cases, but the purging always sets in and continues with great fury. Shortly afterwards succeeds coldness of the limbs, and frequently cramps of the muscles, a feeble pulse, coldness and lividness of the lips, cold tongue and breath. The eyes are sunken, the breathing difficult and oppressed, restlessness is intense, and thirst unquenchable. No urine is secreted. A cold, clammy perspiration covers the body. The whole appearance is appalling, the voice is lost altogether, and the pulse ceases to be perceptible at the wrist.

Distinction.

The only affection which at all resembles cholera is the violent watery diarrhœa, which has been already described. The resemblance may sometimes be

CHAP. XL.

close between the two, but the stools of the latter do not resemble rice-water; they are greenish. The clammy perspiration of collapse does not succeed. Vomiting is not persistent, if it occurs at all, and the pulse is never wholly absent as it is in cholera, nor is the urine wholly suppressed. The breathing is oppressed in cholera, but free in diarrhœa. The lividity of cholera is supplanted by pallor in diarrhœa. Watery diarrhœa is well known in England, whereas cholera is there unknown except at long intervals and in brief epidemics. We have cramps in cholera, none in diarrhœa. Convulsions seldom terminate a cholera case, whereas when watery diarrhœa ends fatally it is usually by convulsions. The issue is hopeful in diarrhœa, whereas the contrary holds of cholera. But if in the early stage there is confusion between the two, as may be, no harm is done, the treatment of one condition being applicable to the other.

Treatment.

"Out of the large number of drugs and methods of treatment which have been recommended for cholera, not one has yet proved of specific value, and all our efforts must therefore be directed against the various symptoms as they appear" (Steiner). For the relief of the vomiting, ice or iced soda water may be given repeatedly and in small quantities. To relieve the great thirst, water should be freely allowed, even though it be immediately and invariably rejected. At the outset of the case an attempt should be made to check the purging with astringents (32), given very frequently, to the first dose of which one drop of laudanum may be added for every year of age the child has completed, provided the case be seen at an early

stage. But opium is not again to be administered throughout the whole case. When lividity and great exhaustion occur, a stimulant mixture (64) should be employed in conjunction with brandy. If there be drowsiness and collapse, apply diluted mustard poultices to the calves of the legs, to the back of the neck, and over the heart. Milk and lime water in very small quantities may be tried as food, and afterwards arrowroot and chicken broth, if indeed the stomach will tolerate anything.

Prevention of spreading.

*Note.*—If all the precautions previously mentioned (pp. 137, 146), regarding the disinfection of the stools, the room, the bedding, &c., be adopted, and other matters which have been also alluded to, attended to, no fear need be entertained that the disease will spread from the patient, either to the attendants or others.

So-called "cholera pills" and "cholera mixtures" are sold very generally. They should never be given to children, as they all contain an amount of opium which would be very dangerous.

## CHAPTER XLI.

### WORMS.

CHAP. XLI.

THERE are three kinds of worms which infest the intestines of children, namely, the thread-worm, the round-worm, and the tape-worm, all of which are depicted in the plate.

Description of thread-worm.

The *thread-worm* varies in size from one-sixth to one-third of an inch, or even more, in length, the male being smaller than the female. They appear as represented in fig. 3, upon the surface of the child's motion,

Habitat.

where they move briskly about. They reside in the lower end of the bowel: they are never found in the sucking infant, but among older children they are the most common of all kinds.

Description of round-worm.

The *round-worm* (fig. 2) varies in length from four inches to a foot, the male being shorter than the female. It is smooth, of a white or pinkish colour, and its body tapers off gradually to a point at either end. These

Habitat.

worms inhabit the commencement of the intestine. Sometimes they make their way into the stomach, and they may even be vomited from the mouth. They are most common in children between the ages of three and ten years. Perhaps only two or three may be present at the same time in the body: it is seldom that their number exceeds twenty, but sometimes many more are found.

Description of tape-worm.

The *tape-worm* (fig. 1) varies in length from about ten to thirty feet, and its breadth is about one-third of an inch at its widest part. The round head, which is only about the size of the head of a pin, is provided with a proboscis, armed with a double row of hooklets. The neck, narrow, and only half an inch in length, is joined to the larger part of the body by a long portion as thin as the neck itself. All this intermediate length is marked with transverse lines, and the whole of the broader part of the body is divided into plainly-marked segments. Each segment (being bisexual), when detached from the rest of the worm, has the power of producing fresh lengths of the parasite. A fully-developed tape-worm numbers "about 1,100 of these joints" (Cobbold). This worm inhabits the small intestine, or that end which is nearest to the stomach.

Wonderful reproductive powers.

Habitat.

The mode by which the various worms gain access to the body, and the precautions to be adopted to avoid their occurrence, have been already described (*see* p. 152).

General symptoms.

The symptoms are unsatisfactory, in that there is no sign or set of symptoms which renders it certain that worms are present. We may be led to believe by symptoms that probably these pests are in the body of a child, but ocular demonstration is the only means of certainty. One of the most constant signs is the passage of a quantity of jelly-like mucus with the motions, while at the same time the bowels are disordered and the general health is unsatisfactory. The child usually becomes pale and flabby, there are dark marks under the eyes, the breath is offensive, and nervous disturbance is manifested by restlessness

Not positive.

CHAP. XLI.

at night, grinding the teeth, and startings during sleep; and by drowsiness during the daytime. There frequently is a short, dry cough: the belly is usually tumid and the appetite capricious, sometimes voracious, at others the reverse. Picking at the nose and itching of the fundament are usual. Such are the general symptoms, which are, however, by no means positively distinctive of worms.

Symptoms special to each kind.

When there are thread-worms in the bowel, itching of the anus, picking at the nose, and straining at stool are the most frequent symptoms. The round-worm causes abdominal pain, vomiting, and nervous symptoms, which may terminate in convulsions.

The tape-worm gives rise to a sensation of "gnawing" in the belly, and to attacks of colic, a ravenous appetite, and progressive emaciation.

Examine the stools.

When there is good reason to suspect the presence of worms, the stools should be carefully examined, after the employment of an aperient medicine. If the suspicion be verified, the no less important information as to the kind of worm is also obtained by the inspection.

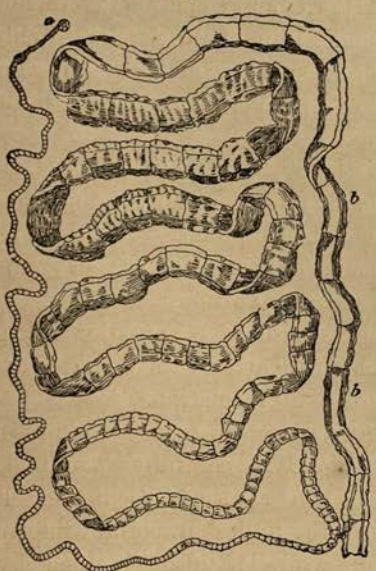
The folly of patent worm-medicines.

The public have an unfortunate habit of concluding that worms must be present when a child continues to fall off unaccountably, especially if his bowels be irregular and he be detected in the trivial action of picking his nose: the result being that the unhappy patient is dosed with quack nostrums, quite irrespectively of the nature of the worm, if any exist, perhaps to the great injury of health.

Must know the *kind* to attack.

Before we can properly treat a case it is essential to know the kind of worm we are to deal with: armed

Fig. 1.



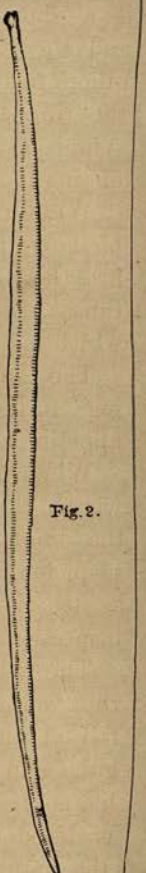



Fig. 2.

Fig. 3.

CHAP. XLI.

with this information the treatment becomes both simple and efficient.

Objects of treatment.

The objects of treatment are (1) to kill the worms, (2) to expel them, and (3) to remedy the bowel and general derangementwhich their presence has caused.

Treatment of thread-worms.

For the *thread-worm*, a brisk purgative (56 or 53, 54) should be given early in the morning, or if there be much bowel irritation, a dose of castor oil (58) will suffice. Throughout the day the diet should be of the lightest description, and in the evening a large enema (up to half a pint) of soap and warm water should be injected so as to wash the bowel thoroughly out. This having been accomplished, we should at once inject and retain for a few minutes two to four ounces of infusion of quassia, to which 15 to 30 drops of the tincture of steel or 8 to 15 grains of sulphate of iron have been added; or in the absence of these medicines, a teaspoonful of common salt dissolved in three or four ounces of warm water will answer the purpose (or 43). It may be necessary to repeat this treatment for two or three days running, either with or without the previous use of the purgative, as circumstances may indicate; following it up with steel and quinine (68). The itching about the fundament may be relieved by the application of a small quantity of a mixture of mercurial ("blue") ointment and glycerine of carbolic acid (1 of the acid to 4 parts of glycerine).

Treatment of round-worm.

The *round-worm* is destroyed as follows:—A dose of castor oil is to be given very early in the morning, and nothing but a scanty quantity of simple semi-liquid food allowed throughout the day. In the evening another dose of oil is to be administered. By this means the worm is laid naked, and exposed to the action of

three or four grains of santonin powder, which should be given with sugar early next morning, on an empty stomach; or the powdered santonin may be sprinkled on a small slice of bread and honey, in doses of one or two grains, twice or three times a day. A cure is frequently effected by a single dose of this drug, but the treatment may be repeated twice or three times at intervals of a few days if the presence of more worms is suspected. The oil may be dispensed with and prescription No. 4 given in the early morning, if there has been no marked constipation, and if the diet has been regulated for twenty-four hours previously.

Peculiar effects of santonin.

Santonin causes the urine to become of a dark colour, and it may occasion the patient to see objects as though they were of a yellowish tint. These peculiarities of the drug are, however, of no great consequence, and they vanish when the medicine is stopped.

Treatment of tape-worm.

Not cured till head has been expelled.

The *tape-worm* is, in the natural course of events, frequently expelled in portions, but as each segment which remains behind is capable of reproducing itself, it is obvious a cure is not effected till the whole worm has been expelled. The segments are always detached from the tail end, wherefore it is a good rule not to rest satisfied till the head has been voided. The head and neck are so very small (*see* fig. 1), that unless carefully looked for they may elude observation. Many yards may be expelled, but a case is not cured until the head has left the intestine.

But the head is well protected.

But the head is exceedingly tenacious of its hold, and being so small, and the intestines in these cases usually containing much mucus which protects the minute head from direct assault, it is necessary, for a

CHAP. XLI.

few days previously to the administration of the worm-destroyer, that the patient be put upon a non-farinaceous diet, from which potatoes, vegetables, pastry, and cakes should also be excluded; meat, eggs, and milk in moderate quantities constituting almost the sole food; very little bread, and that little toasted, being allowed. After two or three days of this food a dose of castor oil is to be given at night; and on the following morning, as soon as the bowels have been relieved, twenty drops of the liquid extract of male fern (6) should be administered to a child of five or six years old. Four hours subsequently a second dose of castor oil is to be given. A very essential point is that very little, if any, food be allowed from the time the first dose of the oil has been given till the worm has been expelled, which will usually be about the middle of the following day.

Must be exposed by special diet.

And castor oil.

Then the male fern is given.

Oil repeated.

No food given.

In the absence of the male fern extract, pomegranate may be used in the manner directed (5). The objection to its use is the large quantity of fluid required to be drunk, and the fact that griping sometimes follows its administration; still it is well to have a tolerably efficient bazaar substitute at hand.

Use pomegranate if no male fern.

Turpentine is an excellent remedy for elder children. The dose should be large, two drachms for a child of six, shaken up with a little mucilage and aromatic water. Small doses of turpentine are apt to give trouble.

Turpentine.

To remedy the bowel and general derangement, we must exclude, as far as possible, starchy food for a time from the diet, especially plantains and potatoes; but the diet should be nourishing. Infusion of chiretta with a couple of grains of bicarbonate of soda in each

Subsequent management.

dose will check the excessive secretion of mucus. If irritability of the bowels still remain, the castor oil emulsion (51) or the red mixture (50) may be used for a few days till regularity has become established. Tonics (such as 68, 72) may be given after all the local symptoms have subsided, with a view to the restoration of the general tone.

## CHAPTER XLII.

### VOMITING.

CHAP. XLII.

VOMITING in infants is a very common occurrence: it may be of very little significance, or it may be of most serious import (p. 162). The habitual so-called vomiting of young infants soon after they have taken the breast is really not vomiting at all, but a simple emission of an unnecessary quantity.

Import.

An easy process in the child.

There is no doubt that vomiting is easier in the child than in the adult: that it is accomplished with less effort, less distress, and less depression, probably because of the straighter position of the stomach.

Temporary attacks.

Slight and temporary attacks of vomiting, lasting seldom beyond a few hours, are not uncommon in young infants. More severe attacks, lasting for twelve or twenty-four hours, accompanied with feverishness and disordered bowels, are also well-known results of irritation; but they yield to emetics, gentle purgation, and a carefully regulated diet (p. 97), the only result being that the muscles become a little flabby (p. 157); after a few days the full strength is regained.

When chronic is serious.

But when vomiting is persistent, when, in fact, it becomes a chronic state, accompanied by wasting and prostration, the case is to be regarded as serious in its nature.

CHAP. XLII.

Symptoms.

At first nothing but curdled, sour-smelling milk, mixed with bile, is rejected; but after a time only clear water is voided; the little patient's belly becomes tumid, the bowels are constipated, or alternately constipated and relaxed, the looser motions being very offensive. Fetid wind is eructated from the mouth, and the belly gurgles. All food is rejected shortly after being swallowed; even the water which is so greatly craved for is vomited. The child emaciates, he becomes pinched, pale, and clay-coloured, and he is cross and irritable. The skin is dry but cool, and the mouth is parched or clammy.

May become very dangerous.

A child may go on in this way for months if not attended to. He is, of course, but a shadow of his former self, but the decline may not have been so rapid as to have attracted great attention. Should the fontanelle (p. 159) become depressed, and the head symptoms of bloodlessness (Chap. XLIV.) appear, the danger is great and immediate.

Signs of recovery.

The signs of approaching recovery are lessened frequency of vomiting and restoration of the natural functions of the bowels.

Causes.

The causes of this distressing and dangerous condition are to be found in departure from the laws which should govern diet and general hygiene. Premature weaning is also a cause; overcrowding of sleeping apartments and insufficient and irritating food are others.

Value of the thermometer.

It is very important to ascertain the temperature with the thermometer (p. 166), because persistent vomiting is sometimes a symptom of the approach of inflammatory diseases of the chest or brain, or of one of the eruptive fevers. In chronic vomiting, as a condition

CHAP. XLII.

in itself, the temperature is always low, generally about 97°, whereas in inflammatory affections of course there will be some fever present.

Treatment of simpler cases.

In the simpler cases a cure may be effected by withdrawing all fermentable articles of food from the dietary and applying the suggestions made at p. 97. But

Treatment of obstinate cases.

should the case prove obstinate, the stools and breath continuing to smell sour, and the vomiting persisting, we must adopt more active measures. When the child is being artificially fed, a wet nurse should be immediately procured. Very frequently a cure will be thus effected. But if this cannot be done, or if the child be too old to allow the idea to be put into practice, he

Diet.

should be fed upon equal parts of whey and weak broth, or barley water and broth, or Cheadle's bread jelly with meat, and, if available, cream (*see* Receipts). All food should be given cold and in small quantities at a time, a spoon being used and not the bottle, because

Frictions.

the act of sucking seems to encourage vomiting. To the belly, frictions of mustard oil, followed by poultices, should be employed. Oil inunctions over the whole body will do much to re-establish the functions of the skin, to promote comfort, and encourage sleep. Should the vomited matter smell sour it will be well to commence treatment by the administration of an emetic.

During convalescence.

Not till the vomiting has ceased for two or three days should any milk be allowed, and then it is only to be given when peptonised and in small quantities, or diluted with twice or three times its bulk of barley water to which some cinnamon or caraway water has been added. Starchy food should be avoided for some time, but Mellin's food may with advantage be gradually introduced.

Should the fontanelle become depressed, brandy and sal volatile must be used, or the white wine whey (8) for younger children. Five to ten drops of the former every hour or oftener in a teaspoonful of water, repeated several times, often proves very beneficial as a sedative, as well as acting as a stimulant. Stimulants.

Should the symptom not yield readily to the above remedies, the *salicylate of soda* (one grain for a child under, and two grains for a child over nine months) given twice or three times a day will often control persistent vomiting. It may be advisable to give an *emetic* dose of ipecacuanha wine in acute cases, and if this be followed by teaspoonful doses of equal parts of *lime water and cinnamon water* at intervals of a few hours, a cure will often succeed. These failing, half a drop of Fowler's solution of arsenic with three grains of bicarbonate of soda in a teaspoonful of caraway water should be given three times a day; or, the Fowler's solution not being at hand, substitute the same quantity of ipecacuanha wine. Of course it is understood that such a medicine as arsenic must be compounded and administered with caution. Medicines.

# CHAPTER XLIII.

## JAUNDICE.

MALARIAL LIVER AFFECTIONS.—CONSTITUTIONAL LIVER DISEASES.—ENLARGEMENT PECULIAR TO RACE.—DISORDERED LIVER AFFECTING THE URINE.

CHAP. XLIII.

Previous allusions.

JAUNDICE.—Allusion has already been made to the spurious jaundice which sometimes accompanies or immediately follows birth (p. 42); we have also seen how chills may affect the liver (pp. 19, 22) and that a sluggish liver is sometimes the cause of a form of constipation which may be attended with a little jaundice (p. 293).

Spurious jaundice

In the jaundice which occurs at birth the white parts of the eyes are not tinged, nor is the urine discoloured, the bowel motions retain their natural colour, and there is no fever. The liver and bile are in no way concerned.

Ordinary simple jaundice.

A true jaundice is sometimes seen *soon after birth.* The urine has a yellow tinge or distinct yellow colour, the eyes are similarly discoloured, and the bowel evacuations are clay-coloured or white. The infant is restless and distinctly ill. Often this condition is

Due to debility.

connected with some wasting affection such as diarrhœa and vomiting, or inflammation of the mouth, indicating mal-nutrition. Occurring *in older children* it is more likely to be due to chill, which has caused a catarrh (swelling and weeping) of the little duct which should lead away the bile, which then not being able to escape through the duct is forced back into the circulation.

Catarrh of duct.

The management of these cases is usually simple and satisfactory. *In the first class*, any diarrhœa or vomiting must be checked chiefly by regulation of the diet in the ways described under those headings, or a sore mouth must be cured (*see* "Mouth, affections of"). These measures, combined with ordinary care and nursing, and the administration of the red mixture or fluid magnesia in small doses for a few days will usually effect a cure. In either class, warmth over the abdomen, with mustard oil frictions over the liver, and rest in bed are essential. For the cases which occur *in older children*, commence by giving a powder consisting of one grain of calomel and three or four of rhubarb. This is not to be repeated, but the action of the bowels which has been thus secured is to be maintained either by rhubarb (49), podophyllin (57), aloes (58), or Epsom salts (54) twice a day, so that two or three motions will be the daily result. When the bowels are easily affected it is best to employ the rhubarb. If the evacuations are hard and white either the aloes or podophyllin may be alternated with the magnesia mixture.

Treatment.

A child is fortunately very rarely born with such a congenital defect as absence of the bile duct, but when it is so, it will, of course, give rise to jaundice in a few

Malformations

CHAP. XLIII. days. A fatal issue is inevitable, nor can it be long delayed.

Malarial liver affection.

MALARIAL LIVER AFFECTIONS.—Children who have suffered much from malaria, or who have been kept too long in a hot country, occasionally suffer from chronic liver diseases of slow growth, not easily recognised at an early stage. The child is probably liable to fever, he wastes, becomes pinched and yellow, loses his appetite, and the bowels are irregular, generally constipated. At first the liver enlarges slowly without pain, and some small amount of abdominal dropsy may then occur. Jaundice is usually only very slight. The spleen is also found to be enlarged. This no doubt is only a phase of the general condition described at p. 208 *et seq.*, with this difference, that the force of the influences is expended chiefly upon the liver. We therefore devote our attention chiefly to the organ attacked. The sooner such a child is sent out of India the better. The long sea voyage and residence in Europe are the proper remedies. If this cannot be done, removal to a healthy dry district in the plains, with perhaps a change to one of the lower and drier hill-stations during the months of exhausting weather, are to be earnestly recommended. An abrupt change from the plains to the higher hills is not desirable. Even a short sea voyage is calculated to help the initiation of improvement. Chloride of ammonium and arsenic are the medicinal remedies from which we may hope most in the first instance. But we must never forget that we can *control the functions of the liver* by regulating the food-supply. We therefore

Treatment.

Control function.

study to devise a diet which is at once simple and nutritious; naturally we look to milk (peptonised or otherwise) as an ally to be relied upon, and we may use with it Mellin's or Savory and Moore's food for younger children, or if the proper age has arrived, a little broth may also be allowed twice a day. To older children we permit sweetbread and some easily digested fish as well as milk, and even a little lightly-cooked tender meat once daily. But enough has already been explained in Chap. IX. to guide as regards diet. Next we proceed to *drain the liver* by salines, of which for these cases the sal-ammoniac is especially suitable; we may give a child of two years old five grains dissolved in half a wine-glassful of water twice a day (and double that quantity to a child of ten) on an empty stomach, while we also give arsenic (3) twice a day after food. But there is another important point, and it is this, that *to make the important chemical changes* which take place in the liver as *complete* as possible, a plentiful supply of oxygen is essential, hence the necessity for pure fresh cool air and very gentle exercise. If this cannot be obtained by the change of locality already mentioned, it is obvious that the freest ventilation and a quiet out-of-door life must be insisted upon as far as the climate and the condition of the patient permit. Constipation is never to be permitted. It is to be met in the manner described on p. 337. As the patient becomes better, probably after the lapse of some weeks of this treatment, especially when the low febrile condition abates or intermits markedly, the acid mixture (64) may be substituted for the sal-ammoniac, the arsenic being continued separately and a purgative

Drain liver.

Promote natural chemical changes.

CHAP. XLIII.

given when required. As the child improves, quinine in solution with Epsom salts, dissolved with diluted sulphuric acid, should be given for a long time—a month at least—and then the case may be finished up by the use of the tonic aperient (70) till health is quite restored.

Constitutional liver disease.

CONSTITUTIONAL LIVER DISEASE.—Sometimes the liver may enlarge and become otherwise diseased in consequence of a constitutional fault. There may then be some dropsy and even a little jaundice. Usually the disease commences shortly after birth. The belly enlarges and becomes shiny. The liver may be easily felt. The child wastes, its skin falls into wrinkles, and probably an eruption will appear on the body. The best thing then to do is to prescribe the iodide of potassium (1) three times a day (without the bromide), and this should be continued for weeks, an occasional purgative of ½ grain of calomel with 3 grains of bicarbonate of soda being given when required. When a marked improvement has taken place, the iodide may have added to it the syrup of iodide of iron (71) in appropriate doses. But professional advice should be sought when opportunity offers.

Another form.

Another constitutional cause may be connected with a family history of scrofula or consumption. The disease does not then generally show itself till the child has advanced in years (perhaps to six or seven). Fresh bracing air, iodide of potassium combined with the syrup of the iodide of iron and cod liver oil and a generous diet are the measures to adopt.

Enlargement confined to Indians and Eurasians.

Among the infants of the better class of natives in Calcutta a disease of the liver of a very formidable

nature prevails. It is also met with, but to a less extent, among the children of the Eurasian community, while it is unknown among the Europeans. It generally occurs in babyhood or the year succeeding it. The illness is often not suspected till the liver has attained an enormous size. Then probably some fever attracts attention, and an examination discovers the liver to extend perhaps half way down the abdomen. The fever continues persistent, though seldom high till towards the end. Emaciation when it once sets in is steady, often rapid. The child becomes bloodless and weak. Eventually dropsy of the abdomen and some jaundice appear, and then in the majority of cases the end is not far off, but the progress may occupy months.

Apparently this formidable disease is the result of overfeeding combined with confinement in the heated and close atmospheres of the female apartments, especially at night, together with want of open-air exercise in the daytime. Young infants are permitted day and night to hang to the breast, and the nourishment thus obtained is supplemented almost invariably from the commencement of life with cow's milk well sweetened. Later on rich sweatmeats, composed of flour, ghee, and sugar, are allowed regardless of intervals of time, while the suckling is prolonged up to two, three or more years!

Treatment

A certain number of infants are rescued from this condition if it be detected early enough. The remedies are chiefly hygienic, and consist in scrupulous attention to a suitable dietary, which should be restricted in quantity and quality, starchy and saccharine articles being reduced to a minimum; the

CHAP. XLIII.

intervals between meals should be prolonged beyond the customary periods, and no food of any kind whatever allowed during these intervals. If the child be a year old it should be weaned absolutely. By these regulations the over-taxed and disabled liver obtains

Rest to liver.

intervals of rest, and as little work is thrown upon it as possible. We must further enable the organ to do

Cool fresh air.

that little without fatigue by supplying fresh air as freely as we can, by insisting upon thorough ventilation; a life in the open air, gentle non-fatiguing recreation in a dry shaded garden if available, and carriage exercise twice a day are very useful. There should be the freest facilities for moving about during the daytime in large well-ventilated rooms and verandahs, which should be kept cool. Nothing in the shape of wine should be allowed, notwithstanding the apparent weakness and loss of appetite. Quinine does not influence the febrile

Medicines.

state and seems to do more harm than good. A mixture containing rhubarb (two grains), phosphate of soda (ten grains) and infusion of gentian a teaspoonful for each dose should be given twice a day and steadily persevered in, so as to cause two or three bowel evacuations daily. If this irritate the bowel substitute the ordinary red mixture (49). Should the fever produce loss of rest at night it is right to give a single small dose of antifebrin at bed-time (*see* Antifebrin). Change to the country from the town is calculated to prove beneficial, but it should be a carefully studied change.

Disordered liver affecting the urine.

Sometimes a child of four or five who does not seem particularly out of health will be observed to cry frequently and suddenly, without apparent provocation; just as suddenly he ceases and returns to his play. When

this happens the parent should watch the child. It will probably be discovered that he micturates very frequently, and further it will be found that the urine deposits a pink sediment. Plenty of out-door exercise, restriction as to puddings and sweets, a sufficiency of properly cooked meat, a dose or two of podophyllin (57) to regulate the bowels, and effervescing citrate of magnesia three times a day, will effect a speedy cure. In addition 5 grains of bicarbonate of soda at bed-time for a few nights will help in the more troublesome cases, and fruits and sweets should not be allowed.

Treatment.

*DIVISION VII.—DISEASES OF THE NERVOUS SYSTEM.*

## CHAPTER XLIV

### HEAD SYMPTOMS.

CHAP. XLIV.

Head symptoms of fever.

THE expression "head symptoms" is one which is frequently used, and on the whole its signification is pretty well understood.

When a child is suffering from any acute febrile complaint, certain signs of nervous disturbance may arise from the excessive heating of the brain and spinal cord, and it has been shown that the undoubted dangers thus arising are capable of being controlled (*see* Fever).

We, however, speak now not of head symptoms due to a previously existing febrile disease, but of symptoms arising independently of such a condition.

Early symptoms of brain mischief.

A child who has, perhaps, up to the present moment, been in his usual health, or who may only have been falling off a little for a short time previously, without being considered actually ill, suffers from disturbed sleep; he grinds his teeth at night, he vomits and becomes restless and irritable: the bowels are deranged,

nearly always constipated; the look is haggard, the appetite is gone, the head is hot, the child is annoyed by noise and light, he starts up from his sleep in a state of terror, is generally feverish, and complains of pain in the head. Such are the earlier signs of commencing brain mischief.

Progress of the case.

These signs may, however, have attracted but little attention, notwithstanding that they have perhaps occupied several days. It may be that the child's condition has not been noticed till there is a knit brow, persistent vomiting, stupor, twitchings, or perhaps rigidity, of the muscles, some fever, squinting, irregularity of the pupils, alternate flushings and pallor, and occasional shrieking and excitement from which the patient soon again lapses into drowsiness, to be followed perhaps by delirium and convulsions. The fontanelle, or opening in the bones of the head of younger children, will be felt prominent, bulging, and perhaps throbbing.

Similar symptoms due to an opposite cause, viz., bloodlessness, without any disease of the brain.

These are the head symptoms which usher in inflammatory affections of the brain. But symptoms resembling them in many respects may arise under totally different circumstances, and from a wholly different cause, importing a different disease, and requiring a diametrically opposite kind of treatment. A case of the kind may be described as follows:—A child has been under treatment for a serious diarrhœa, he becomes heavy and drowsy, but he does not sleep, he lies back upon the nurse's lap unwilling to raise his head, the eyes remain half open; perhaps there is vomiting, and the face is wan and pinched; every now and again he starts with a piercing shriek, which subsides as a series of shrill diminishing moanings or

CHAP. XLIV.

whinings, till the patient resumes for a short time his previous lethargic state. Noises startle the child. The body is cool, frequently cold. If the fontanelle has not closed, it will be found to be depressed. A convulsion is apt enough to succeed this state if relief be not afforded, and should it unfortunately occur, no very hopeful view of the issue is justifiable. Here, again, the child is suffering from "head symptoms"; but let us note the difference between these and those previously alluded to.

Distinction betweeen the two.

| A. | B. |
|---|---|
| REAL BRAIN AFFECTION. | SIMULATED BRAIN AFFECTION. |
| 1. There has been no previous acute illness. | 1. Always occurs in the course of some exhausting sickness, or after premature weaning, either of which has greatly reduced the child. |
| 2. Always distinct fever as measured by the thermometer. | 2. Never fever, usually a lower temperature than that of health. |
| 3. Constipation. | 3. Diarrhœa. |
| 4. Frequent flushings of the face. | 4. Always pallid. |
| 5. Intolerance of light. | 5. No intolerance of light. |
| 6. Squinting and well-marked general head symptoms from the beginning. | 6. Absence of head symptoms till exhaustion has become great. |
| 7. Vomiting almost always present. | 7. Vomiting only occasionally present. |

Vital difference.

The difference between the two cases is really this: in the latter the brain has been so drained of its proper blood-supply that the suspension of its functions is threatened; in the former the brain is so congested that its functions are similarly in immediate danger.

The causes of the one (A) may be (1) constitutional predisposition, which has been called into activity by bad hygiene or exposure to the sun; (2) blows on the head may suffice; (3) disease of the bones of the ear extending to the brain (*see* Ear). Of the latter (B) there is but one cause, viz., great exhaustion of the vital powers. Premature weaning may cause it. As might be anticipated, it is more frequently met with in India than in Europe, because of the greater frequency of exhausting diarrhœas and the debility of climate.

Treatment.

It cannot require any further remarks to make clear the necessity for a different treatment in either case.

Of real brain symptoms.

(A) Symptoms indicating congestion or the earlier stages of inflammation require to be met with a light diet, active purgation, absolute quiet of body and mind, cold to the head, and sedative medicines; whereas (B) symptoms of brain bloodlessness are to be treated with concentrated nourishment, stimulants, astringents, and the bromide of potassium as directed on page 305. Of this latter no more here need be said than to quote a caution as given by Dr. West. "If," he says, "in a case of this kind you fall into the error of regarding the head symptoms as signs of active disease, and withhold the medicines that might have checked the diarrhœa and soothed the irritability, while you apply cold lotions to the head and give the child nothing more nutritious than barley-water in small quantities, because the irritability of the stomach, which results from weakness, seems to you to be the indication of disease in the brain, the restlessness will before long alternate with insensibility, and the child will die either insensible or in convulsions."

Of spurious brain symptoms.

CHAP. XLIV.

Detailed treatment of the first.

To enter more into details regarding (A) the commencement of active mischief within the head, the treatment should be as follows:—If the stomach is at all loaded, we should begin with an emetic of ipecacuanha (39, 40); indeed, this is a safe proceeding in any case. Then, with as little delay as possible, a strong purgative (56) should be given, and at the same time an enema (45) administered. Of mixture No. 55, two teaspoonfuls should be given twice a day to keep up the purgation.

In the meantime the child should have been put to bed in a darkened and cool room, and the diet should consist only of light slops. That the most perfect tranquillity should surround the child is a matter of the highest importance; no one should play with him, or even speak with him, and irritability on his part should be controlled by means of the tepid bath, and the administration in the first instance of a dose of chloral (8), and subsequently the steady use of the bromide of potassium mixture (9). Cold should be applied to the head by means of ice (p. 177) or cold lotions (13, 35), and the room should be well ventilated.

By strict attention to these directions a serious attack may be averted.

*Water on the brain* is a dropsical condition produced by the further progress of brain disease, which is at first indicated by the symptoms (A) above described, but they are then of a chronic nature, and come on very insidiously. Indeed, the enlargement of an infant's head, together with its loss of flesh, are frequently the first signs which attract attention. Then succeed squinting and the other signs enumerated, till convul-

sions terminate life or the case becomes chronic. All that can be done in such an event is to adhere to the general laws of hygiene, to nourish the sufferer thoroughly, keep the bowels well open, and to obtain medical advice as soon as possible.

# CHAPTER XLV.

## CONVULSIONS.

CHAP. XLV.

MANY allusions have been made to convulsions on previous pages.

"Warnings."

The phenomena of an attack are well known. Sometimes, but not always, there are "warnings" of the approach of a fit, such as convulsive twitchings of the face, startings during sleep, inward bending of the thumbs upon the palms of the hands, the fingers being doubled over them; a somewhat similar condition of the toes, and squinting.

Symptoms.

When a fit occurs the child becomes deadly pale, the features are distorted, the eyes stare and are rolled about, the breathing is irregular and catching, the body becomes rigid, and the hands are clenched. All this may happen in a minute or less, or it may occupy five minutes, a quarter of an hour, or even more. The more violent the convulsion, the shorter the attack usually is, and *vice versa*. When the fit is over, the child comparatively resumes the appearance of health, a perspiration succeeds, and he falls into a sound sleep.

Dangerous symptoms.

A child seldom dies in a fit, but of such a catastrophe there is danger when spasmodic closure of the air passages takes place. In that event the face becomes purple, the head is bent backwards, violent efforts are made to breathe, a crowing noise like that of croup is made as the air tries to pass through the narrow chink,

but it becomes fainter and fainter till it eventually ceases altogether, or a louder and prolonged sound proclaims relief.

Practical classification.

The causes of convulsions may for practical simplicity be divided as follows :—

1. Convulsions the result of *overheating of the blood*, and through it of the brain and spine. Such are the convulsions which frequently occur during a state of high fever, without any special warnings, except the elevated temperature of the body.

2. The convulsions of *bloodlessness of the brain*. It will be recollected that this form of convulsions occurs only in children who have been subjected to exhausting illness, and that it comes on with marked head symptoms (pp. 303 and 346).

3. Then there are the convulsions of actual *brain affection*, which commence with well-defined head symptoms which usually have existed and attracted attention for some days before the seizure occurs (p. 344). In such cases the convulsions are generally one-sided.

4. Finally, there are what may be termed *simple* convulsions; that is, the fit occurs without the previous existence of any illness. Teething, for instance (which is popularly held responsible for almost all results of neglect), may, no doubt, increase the liability to convulsive disturbance. Fright has been known to cause convulsions, so has the sudden drying up of a scalp eruption; but the latter I believe to be a very rare cause. Mental suffering or shock on the part of the mother is a sufficient cause. Worms occasionally give rise to convulsions. The children of epileptic parents

CHAP. XLV. are certainly more liable to convulsions than other children. Impropriety in the matter of diet is a very frequent cause. It is said that the children of those who marry very early or very late in life are unduly liable to be affected. Rickets is another cause. An approaching pneumonia is sometimes ushered in in this way. Reflex convulsions are due to some distant point of irritation. As an example, a case which the writer saw in Calcutta with Dr. O'Brien may be quoted. All remedies having failed to relieve violent and rapidly recurring convulsions which had persisted for some days, Dr. O'Brien, seeking anxiously for some cause, was attracted by a long irritated foreskin. He performed circumcision, with the result of an immediate and permanent cure.

Necessity for classification.

When a case of convulsions presents itself there can be no hesitation in at once classing it under one of the foregoing heads, and this is very essential, because the treatment is different in each instance.

Facility of distinction.

Has the child strong fever? No. Then the case is at once excluded from No. 1. Is he undergoing any exhausting disease? is he being severely purged? If not, and the child has been comparatively well till seized, No. 2 is excluded. Has he suffered from previous head symptoms (p. 345), without any debilitating complication having existed? If not, the brain itself is not the origin of the present seizure. But if in the absence of these three a child is seized with convulsions, the case must necessarily fall into the fourth class, and it becomes evident that some removable cause has temporarily deranged the working of the nervous machinery.

CHAP. XLV.

Treatment.

No. 1. The treatment of a case of convulsions due to heat of body consists in reducing the temperature by immediately placing the child in cold water up to its neck, and pouring cold water over its head as described at p. 173. No time should be lost in undressing the child and in making preparations, but clothes and all, just as he is, he should be immersed in the bath. Consciousness will soon return and sleep be secured. The subsequent treatment is to consist of the adoption of the means detailed on pages 175–181, conjoined with the special treatment recommended for the particular form of fever from which the child is suffering.

(1) Convulsions of fever.

No. 2. Convulsions due to exhaustion are rather to be prevented by the means described at p. 305. When a seizure arises from this cause it is always of very serious import. The child should be put into a hot bath to which mustard has been liberally added; he should be handled with the greatest gentleness, subjected to no sudden jerks; he should not be placed in the sitting posture, and care should be taken to keep the head low. While in, or after removal from the bath, we should endeavour to get him to swallow a little brandy and water, to which from five to ten drops of sal volatile have been added. Plasters made of one part of mustard and two of flour should then be applied to the calves of the legs. Rolled in a blanket, the child should be placed close to a good fire if the weather be at all cold. If the weather be damp, even though so hot that it is necessary to keep the windows open, a fire should be kept up in the room. Should consciousness return, we must pursue actively

(2) Convulsions of exhaustion.

CHAP. XLV.

the administration of nourishment and stimulants; the latter, however, only with much liberality while great depression lasts. So much having been gained, we resume the preventive treatment detailed on page 305.

(3) Convulsions of brain disease.

No. 3. Here again we hope for most from preventive measures. But when a fit occurs the child is to be put into a warm bath (about 98° temperature), and cold applied to the head, either in the form of ice or of a cold lotion (13, 35). A couple of grains of calomel may be placed upon the back of the tongue. As soon as the power of swallowing is regained, a dose of chloral (8) is to be followed by the bromide of potassium mixture (9) each hour till all disposition to a return of the fit has passed away, and then the treatment described at page 348 should be resumed.

(4) Simple convulsions.

No. 4. For a simple convulsion the child is to be put into a warm bath (temperature about 102°), and while there cold water is to be sponged over the head. As soon as possible administer an enema (45). When capable of swallowing, an emetic (39, 40) should be given to empty the stomach and cause the skin to act. A strong purgative (56) should follow at the first convenient opportunity. The gums should be examined, and if anywhere angry and swollen by a pressing tooth, the gum-lancet should be brought into requisition. A dose of chloral (8), followed by the bromide of potassium (9) at intervals of an hour till all undue excitement has subsided, should be given, but if the patient cannot swallow, and the convulsions continue, the chloral should be administered as an enema. If the bowels have not acted within three or four hours, a draught of Epsom

salts and senna (53) should be given; it is a matter of moment to relieve them thoroughly.

General measures.

Great pains should be taken to encourage the sleep which usually succeeds convulsions. By means of the bromide of potassium rest may always be assured in cases where restlessness succeeds the fit, and a grain of chloral for each year of age of the child may be added to the *first* dose; or, the bromide of ammonium and chloral may be combined as in formula 8 (*b*). Till sleep is procured there is always immediate danger of a recurrence of the seizure. The most perfect quiet should be observed. No attempts should be made to play with the child or to amuse him after he has recovered his senses. Subsequently for a few days he should be put upon a spare diet, and the bowels should be kept rather loose, except in class No. 2, when constipation, if it be induced, is to be encouraged. A cool surrounding atmosphere is essential. Great care should be taken to see that the mouth is free from all obstruction during insensibility, and the tongue should be drawn forward if it has fallen to the back of the mouth. If the cause of the seizure has not before been apparent, every effort should now be made to discover it, for however well the patient may seem after the fit, there certainly was some cause which has probably not been permanently removed by the management which has been adopted during the fit. It may have been improper food, indigestion, worms, flatulence, fright, or so forth, against any of which, when the accusation has once been established, precautions should be taken during the whole remainder of childhood.

## CHAPTER XLVI.

### INFANTILE LOCK-JAW AND INFANTILE PARALYSIS.

CHAP. XLVI.

Frequency and fatality.

THIS affection, though rare among European infants, had better be noticed here, on account of the alarm and sense of helplessness which its occurrence is sure to occasion. Among the children of natives the disease is unfortunately very common, and it is the chief cause of the terrible infant mortality of Calcutta. It is much more frequent in hot than in cold or temperate climates.

Occurs only during the first days of life.

The affection usually occurs between the third and tenth days after birth; though it may happen within twelve hours of life, and still more rarely it may make its appearance after the ninth or tenth day.

Symptoms.

Though the disease runs a rapid course, yet there are always premonitory symptoms, such as restlessness, whimpering, broken sleep, yawning, and hasty snatches at the mother's breast, which, however, the infant soon relinquishes. Most probably the first thing which attracts the mother's attention will be inability on the part of the infant to take the breast, a fact which the mother will at first be inclined to attribute to some fault of her nipple, unless she happens to examine the infant's jaws, which will be found more or less stiff.

After a few hours the jaws become fixed and the features undergo alteration, the lips are drawn tightly over the gums, the corners of the mouth are pulled downwards, and the half-closed eyes assume a peeping expression. The limbs and spine soon become partially or wholly stiff, the hands are clenched, and the head is bent backwards. At intervals a quick spasm passes through the whole body, a symptom the frequent repetition of which indicates a rapidly fatal ending. From the commencement the temperature of the body is high —103° or 104°.

Seriousness.

Terrible and fatal as is this affection, the infant's condition is not altogether hopeless, though it must be admitted that recovery is the exception.

Causes.

As to cause, it has been conclusively proved that poisonous air (pp. 13, 117) is the means by which the disease is most frequently originated. Chills during these days of tender life have been accused, and probably with some truth; so has bad management of the navel-string, by which it has been pulled and irritated. To the employment of too hot water for the bath the disease has also been imputed (p. 122).

Treatment.

That the disease is preventable by avoidance of the causes above enumerated is the most important point to bear in mind concerning it, for, unfortunately, treatment has not led to satisfactory results. The great difficulty in the management of such a case is, of course, as regards the introduction of nourishment. The jaws must be separated by means of the end of a spoon, or a small piece of wood protected by linen rolled around it, and drop by drop some of the mother's milk, or a little milk and lime water, is to be admitted

CHAP. XLVI.

cautiously from a spoon. (A surgeon would feed the infant by passing a soft tube through the nostril down the gullet.) An enema of a teaspoonful of the same every hour may also be tried, a small glass syringe being used with the utmost gentleness. The warm bath may be tried; and a grain of chloral and two grains of bromide of potassium, dissolved in half a teaspoonful of water, should be given every two hours or oftener till the child sleeps or spasm is relaxed; enough being afterwards given at intervals to keep up this effect. Some lives are in this way saved. If the medicine cannot be swallowed it should be administered as an enema. The best plan is to introduce it by means of the hypodermic syringe, but the presence of a medical man then becomes necessary.

## INFANTILE PARALYSIS.

Is happily rare.

This also is one of those diseases which, though happily rare, comes upon the child with such suddenness that it is essential the parent who is out of reach of medical aid should know something of it, in order to obviate that despair which total ignorance in the presence of a catastrophe is sure to engender.

Paralysis in child not so serious as in the adult.

Paralysis—that is, loss of the power of motion over one or more of the limbs—is always an anxious affair; but it will be some satisfaction to the parent to know that in the child its import is not nearly so serious as in the adult.

Symptoms.

The symptoms are few; often there is nothing more than loss of motion to be observed, that is, the paralysis is essentially one of motion and not of sensation. Sometimes, however, with this there is an increased

degree of feeling in the helpless parts; sometimes, but very seldom, there is diminished sensibility. Most frequently the legs are affected, but it may be the arms, or an arm, or an arm and a leg. All the muscles of a limb are not paralysed, hence the patient is able to move perhaps his fingers or toes, or even partially to bend an affected limb. Usually ushered in with a brief violent fever, the paralysis is discovered when an attempt is made to lift the child. Recovered from the fever, the amount of paralysis remains stationary for a variable period—a week to a month—when the palsy passes gradually away from certain muscles, but remains as before in others, and these latter become flabby and waste away till the patient has passed into a chronic condition, and certain contractures and deformities occur in the course of time. The amount of improvement which may take place in the second stage is very variable, sometimes it is but slight, sometimes great. Certainly the danger of extension is passed in the first twenty-four hours of the disease, and "in the chronic stage, unless there is some sign of returning power within three weeks, very little recovery will occur" (Gowers). Immediate danger to life is not involved. Subsequently the condition of the child is fairly satisfactory, even should he not recover in the first instance; there is no suffering, growth and education advance; the mental development is not impaired, and the sleep and appetite remain natural.

Prospects.

The initial fever will have to be treated in the ordinary way (*see* Fever). Medical advice should afterwards be procured, but in its absence the parent should seek out all possible causes of nervous

Treatment.

CHAP. XLVI. irritation, and endeavour to remove them; the teeth should be examined and lanced if necessary, the possibility of the presence of worms considered, the bowels regulated, every minor matter thought of, and every clear conclusion acted upon. An iodide of potassium mixture (12 grains to one ounce of water; dose, a teaspoonful three times a day) should be given for about a week following the attack, and then iron, either as steel and quinine (68) or the syrup of the iodide (71), should be substituted and persisted in for a long time. The affected limbs should be carefully shampooed daily, after the first week, with a stimulating liniment (18) or mustard oil. The diet should be liberal, and the child should be taken as much as possible out of doors. Galvanism is a remedy which, at the proper time, the physician is pretty sure to employ.

If of malarial origin. In case the patient has been previously much the subject of malarial fevers, quinine in small doses should be given in addition to the other remedies, and a change of air sought without delay. A sea voyage is always calculated to benefit these cases.

Other kinds of paralysis There are *other kinds of paralysis* from which children occasionally, though fortunately rarely, suffer, but it is unnecessary to enter into their consideration here. They are chiefly characterised by the paralysis being confined to one side of the body or by a rigid condition of some of the limbs. Such states may happen after convulsions and are occasionally noticed at birth. The brain has received some injury, but

many of these cases recover. The parent can do but little beyond treating convulsions, paying every attention to the nutrition of the child, handling it with care, disturbing it as little as possible, administering the iodide of potassium mixture mentioned on the opposite page, and seeking medical aid as soon as it can be obtained.

# CHAPTER XLVII.

## SUN-STROKE AND HEAT-STROKE.

### CHOREA.

CHAP. XLVII.

Nature.

SUN-STROKE is really nothing more than a very sudden and aggravated attack of ardent fever produced by the heat of the sun's rays.

Fever has been stated to be a burning up of the body. So it is; but what originates the combustion? A poison has entered the blood, which produces its earliest effect upon the most tender point, namely, the nervous system. Thus we have shivering, depression, and other symptoms. Through default of the nervous system, nutrition is impaired, and disintegration of the muscles is caused, whereby preternatural heat is produced. Now ardent fever represents the effect upon the nervous system without the previous intervention of a poison such as is introduced in measles, small-pox, ague, and so forth. Sun-stroke represents a still more severe nervous shock, by which the nervous currents are even still more violently interfered with. We have, in fact, the climax of the febrile state produced instantaneously almost, secretion and excretion are suspended, and all the natural means of getting rid of heat are in abeyance. Accumulation of heat is the natural result, and the limit of temperature beyond which life is possible may be speedily reached; and, if passed, paralysis of the heart and muscles of respiration succeed, and death is the result.

Causes.

Exposure to the direct rays of the sun or great heat in a confined atmosphere, particularly if a free supply

of drinking water is not available, are the causes of the attack. CHAP. XLVII.

Natural heat is produced within the body by chemical changes. Evaporation from the surface regulates it, and "so beautifully is this balance preserved, that the stability of the animal temperature in all countries has always been a subject of marvel. If, however, anything prevents this evaporation, radiation and the cooling effects of morning winds cannot cool the body sufficiently in the tropics. Then, no doubt, the temperature of the body rises, especially if in addition there is muscular exertion and production of heat from that cause" (Parkes).

Excessive external heat is the sole cause, whether the patient be instantly struck down by the sun (sun-stroke), or whether he be less suddenly attacked by accumulated heat (heat-stroke). Symptoms.

Of the symptoms there is little to be said. The patient is insensible, the eyes are fixed, the pupils contracted, the white parts of the eyes are of a red colour, the breathing is rapid and after a time noisy, the heart may be observed to beat tumultuously against the chest, the skin is burning hot, and the patient appears as if dying. Convulsions may or may not occur.

These symptoms may be preceded by certain *premonitory* signs, such as thirst, suppression of the perspiration, giddiness, faintness, and suppression of the urine. Warnings.

*Prevention.* Non-exposure to the sun, properly ventilated rooms, the use of the punkah, an abundance of cold drinking water, and loose and light clothing, are the proper preventive measures. Upon the occurrence of premonitory symptoms, or indeed Treatment. Preventive.

CHAP. XLVII.

after any exhausting exposure to great heat, a cold bath should be given, a purgative administered, and the child kept quiet in a cool room under a punkah.

During attack.

*Upon the occurrence of an attack.* Cold in the form of the cold bath, or of cold water poured continuously over the naked body, is the great remedy; but for either to be efficient, they must be persisted in till the temperature is thoroughly reduced. Not a moment should be lost, lest the narrow line beyond which recovery is impossible, be passed. As soon as swallowing power is regained, a dose of antifebrin (37) should be given; then the patient should be laid in the coolest available place, and allowed there to sleep if he will, cold being still kept to the head. The thermometer should be in constant requisition, and should the temperature show any disposition again to rise, cold, as before, is to be resorted to. Great care is to be taken not to mistake the gradual approach of insensibility for sleep, but if the thermometer be sedulously employed* and the application of cold thereby regulated, there will not be much danger of this error occurring; at the same time, sleep is not to be interfered with. Insensibility will not recur without an increase of bodily heat. Any disposition, after recovery, to restlessness and excitability should be met by the administration of a dose of chloral (8), followed by the bromide of potassium (5), and cold to the head. As soon as possible a purgative should be administered, none being

After treatment.

* By introducing the bulb one inch within the bowel.

better than the ordinary salts and senna; and then the patient should be put upon moderate doses of quinine for a few days; or, if there be anyone competent to do so, half the quantity of an ordinary dose may be injected beneath the skin before he has sufficiently recovered to be able to swallow medicine.

## CHOREA.

Description.

Children between eight and ten years of age who have suffered from rheumatic fever are liable to the affection called Chorea or St. Vitus's Dance—girls more than boys. It is characterised by an exaggerated fidgetiness and irregular uncontrolled movements, together with weakness of the muscular powers. Sometimes the speech is affected. There are all degrees to which the violence of the movements may attain, but they cease during sleep. The temperature is generally below normal. The disease has a tendency to recur.

Prospects.

Most cases recover completely, the more acute the onset the more rapid the recovery. The average duration is ten or eleven weeks.

Treatment.

Complete rest of body and mind are of the first moment in treatment. The child should be confined to bed till the more violent movements cease. These objects may be greatly assisted by bromide of potassium (9) and sulphonal (*see* Index). A regulated use of the muscles by occupying the time in writing, drawing or knitting is useful, when the movements permit the attempt. A warm climate, enabling the child to live in the open air, is a great aid. Arsenic (three to five drops of Fowler's solution of arsenic for each dose, three

CHAP. XLVII.

times a day in a wineglassful of water, after food) is the remedy upon which to rely medicinally. It should be given in gradually increasing doses for a prolonged period, probably for six months, alternating it every three or four weeks, for a similar period, with "Blaud's pill," till recovery is completely established. Cod liver oil may afterwards be used. A liberal dietary should be observed throughout.

Chorea is decidedly uncommon in India.

*DIVISION VIII.—AFFECTIONS OF THE KIDNEYS AND BLADDER.*

## CHAPTER XLVIII.

### DROPSY.

CHAP. XLVIII.

Definition.

DROPSY signifies the accumulation of a watery fluid, either in the abdominal cavity, or in the loose fat which lies immediately underneath the skin, throughout the whole body. It may involve the abdomen and the body generally at the same time, or it may be only partial, the legs, below the knees, being the only parts affected.

Not so serious as in England.

Dropsy among children in India is not so serious a complaint as it is in England, because the majority of the Indian cases are of malarial origin (p. 208), and are simply a sign of general debility, whereas in England, scarlatina, by damaging the kidneys (p. 220), is the most constant cause.

Symptoms

The countenance is the first part to appear puffy and swollen if the child has recently been much in the recumbent position; if otherwise, the feet are the first to swell. The swelling of a dropsical limb may be known by pressing the point of one of the fingers steadily into it for a few moments, the pit so caused will remain after the pressure is removed. The belly at the same time will probably begin to enlarge, and the child assumes a pasty appearance.

CHAP. XLVIII.

Classification. (1) Malarial. (2) Kidney disease.

For popular practical purposes dropsy had better be divided into two classes, viz., (1) those which are due to malarial debility, and (2) those which arise from kidney affections.* The first may be known by the fact of the child having been a sufferer from malarial fever, which has left him weak and debilitated, the spleen may be enlarged, and the other signs mentioned on page 208 will be present, without any appearance of kidney disease. The second is recognised by the occurrence of a distinct febrile attack accompanied with pain across the loins, and a very scanty flow of urine, having ushered the attack in, or the fact of its having followed upon an attack of scarlatina.

The first is very amenable to treatment.

As to the prospects of these cases, dropsy is always to be regarded as a serious complication, but the majority of the malarial cases recover under proper management.

The second serious.

The second class of cases is much more serious. So long as the quantity of urine voided remains scanty, and while at the same time the dropsy goes on progressing, anxiety will justly be great; but we see many formidable cases of dropsy in India, in which the kidneys were severely affected, recover; and I cannot but think the proportion of recoveries is greater than in England, on account of the Indian climate, which increases so greatly the facilities for preserving or re-establishing the action of the skin.

* Dropsy is also a symptom of advanced liver disease, and it occurs too at the end of bad heart cases, but these affections will probably have been long under treatment before the dropsy appears, and the parent will not be called upon to diagnose and treat these cases.

Treatment.

As to treatment:—(1) The dropsy of malarial debility, being only a result of a general condition, is to be managed in the way laid down at page 209, which in the majority of cases will yield a cure. (2) The dropsy which springs from the inability of injured kidneys to draw away sufficient water from the body, is to be treated upon different principles. The great point here is to re-establish the functions of the skin, and to cause it to act as much as possible; in fact, we endeavour to get the skin to do a great part of the work of the kidneys, which thus obtain rest, while at the same time the noxious materials ordinarily got rid of through the kidneys are withdrawn through the skin, and blood-poisoning is prevented. From the commencement, therefore, we keep the child in bed and as warm as possible, administering a mixture containing Mindererus' spirit, ½ a drachm, and tincture of digitalis, 3 minims per dose, every third hour. A vapour bath (*see* Index) should be given daily in acute cases; or even twice a day if the child be strong enough to bear it and the weather permit. A copious perspiration should be induced on each occasion. Still with the same objects (viz., relief to the kidneys and removal of noxious material), the bowels should be kept loose by the use of seidlitz powders (61) occasionally, or by mixture No. 55. This is a matter of prime importance. The diet should be light but nourishing, consisting chiefly of milk and farinaceous foods, such as bread and butter and puddings. Light broths may also be allowed in moderation, but not much meat till there has been considerable improvement. On no account should alcoholic stimulants of any kind or any medicine con-

Re-establish functions of skin.

Vapour bath.

Purgation.

Diet.

CHAP. XLVIII.

taining opium be given. A large bran poultice should be prepared and placed upon the bed, the child should then be laid upon his back so that the poultice envelop the whole of the loins; this may be done for an hour, morning and evening; or longer on each occasion, if the child have patience to bear it. By these means the acute symptoms will be overcome, the feverishness will diminish, and the quantity of urine increase. As soon as this is effected a diuretic mixture (38) will be of service, but not before. When convalescence is fairly established, a course of tonics (68) may be commenced. It may be judicious to combine the tonic with an aperient (70) for a time, to ensure and prolong the relief to the kidneys.

Poulticing kidneys.

Subsequently tonics and aperients.

## INCONTINENCE OF URINE.

Children sometimes suffer from inability to retain their urine except for very short periods. In most cases it is only at night that the annoyance occurs, but occasionally it happens both day and night.

Generally happens at night.

Very often the cause is simply bad management, by which a dirty habit has been engendered, and which may become more or less naturalised and difficult of removal. Acidity of the urine, the presence of worms in the intestine, an elongated and adherent foreskin in boys, or only a general constitutional weakness, are each of them sufficient to produce this effect.

Causes.

To remedy this state of things is frequently not easy; but whatever efforts are made, without the assistance of a careful nurse no good need be hoped for. No fluid should be allowed for two or three hours before bed-time. The child should be taken up two or three times to urinate during the night. Upon each

Trustworthy nursing essential.

Its details.

occasion he should be thoroughly roused, so that the act be wholly voluntary on his part. He should lie upon a hard bed, and be prevented from resting upon his back by fixing a cotton reel behind, by means of a string passed through the hole, and tied around the waist: this will cause him to awake or move again on his side, should he happen to lie upon his back.

Correct the urinary acidity.

If any of the conditions enumerated as causes can be accused of originating the trouble it should be treated, but if this cannot be done the acidity of the urine should be tested with litmus paper. If it be great, three to five grains of bicarbonate of potash or soda may be given in a little water three times a day.

Caution.

The urine, it is to be recollected, is naturally acid, therefore the litmus paper ought to turn slightly red, but it should not become instantly of a bright red colour. On no account should the medicine be continued long. It would be wrong to neutralise the acidity altogether, but the litmus paper will inform us.

Diet important.

But it is chiefly by a very careful regulation of the diet that a healthy state of the urine is to be maintained. Entire withdrawal of meat from the diet has been known to cure cases. Cold sponging to the spine just before bed-time is sometimes useful if it be not too annoying to a sleepy child. These preliminaries being settled, the child should be put upon steel and quinine (68), unless he be of a particularly weakly constitution, when the iodide of iron and cod liver oil (71) will suit better. Constant outdoor exercise, amounting to slight fatigue, should be enjoined, and every means to improve the general health adopted.

Medicine.

If there be a congenital defect, a surgeon should be sought, to perform the simple operation of circumcision, which is frequently a very effectual remedy.

CHAP. XLVIII.

There are other medicines (belladonna, strychnine, and ergot of rye) which are of great value in these cases, but they are of a nature that precludes their use by any but a medical man. Belladonna, in the form of tincture, may, however, be employed by adding three or four minims to each dose of prescription No. 9, giving the mixture three times a day, and regulating the dose of bromide according to the age of the patient. For a nervous, irritable child it is better to commence the treatment in this way before resorting to the tonics named.

Excessive quantity of urine.

In those rare cases in which *urine is habitually voided in excessive quantities* in childhood, valerian is a remedy which is likely to prove very serviceable—10 to 15 drops of the tincture in water three times a day for a child four years old. For older children the valerianate of zinc, $\frac{1}{4}$ grain in water three times a day, will be better. But a doctor should be consulted with a view to having the urine analysed.

The effect which liver derangement has upon the urinary function has been already spoken of (p. 342), and should be remembered.

## CHAPTER XLIX.

### NETTLE-RASH, ECZEMA, PRICKLY-HEAT, HERPES, ITCH, RING-WORM, BOILS.



1. RED GUM or WHITE GUM (Strophulus) are names given by nurses to a trivial eruption of the skin of infants, consisting of little groups of red or white pimples, chiefly on the face, but it may also happen on the limbs and body. A modification of diet, a few doses of the red mixture, and the application of a lotion consisting of one drachm of oxide of zinc, half an ounce of glycerine, and six ounces of lime water, will relieve the irritation and soon cure the complaint.

2. NETTLE-RASH may be caused by the presence of worms in the intestine, or by improper food, such as a child may surreptitiously obtain; for instance, unripe fruit, cucumber, pickles, and so forth. The rash consists of a number of elevated, itching, and burning points, very like in appearance the effects produced by the sting of a nettle; it seldom lasts more than a few days, and requires for its management the simplest treatment,—an emetic, if there is likely to be any offending food in the stomach; purgation (49, 52, 55), careful regulation of the diet, and the administra-

2. Nettle-rash.

Description and treatment.

CHAP. XLIX.

tion of three or four grains of bicarbonate of soda in some infusion of chiretta after each meal, for a few days. Locally, tepid sponging or the warm bath affords almost instantaneous relief; oil should be applied to the part afterwards, or, better still, the zinc and lime water lotion above mentioned.

3. Eczema. Very troublesome.

3. ECZEMA is often a troublesome affection. It usually selects the bends of the elbows and knees, the scalp, and, in young children, the cheeks, neck, and arms, for its position. A number of minute watery vesicles appear, the surrounding skin being irritable, red and

The eruption.

hot. The contents of the vesicles soon become whitish, the irritation increases, and the child is sure to scratch and break them. The discharge still further irritates the surrounding skin—indeed, it seems almost to burn it and to remove the thin outer layer. After a short time the discharge hardens into a yellowish crust, which cracks in many places, and from these cracks more of the clear irritating fluid exudes, as well as from under the outer edges. Portions of the crust may even become detached, leaving behind a raw, angry, moist

Mild form.

surface. When of a mild form the crops of vesicles die away naturally, the skin of the affected part scaling off afterwards; but fresh crops of vesicles are apt to recur.

Causes.

Eczema is caused by defective digestion, and it indicates debility. It is not contagious.

Treatment. Local.

The objects of treatment are to relieve the local distress and to improve the general health. A poultice should be applied to the scab, and repeated until the latter is detached; the inflamed surface thus exposed should not be washed or wiped, but the exuding fluid

may be sopped up by a little bit of sponge. Over the raw surface, the oxide of zinc ointment, which has been diluted with glycerine sufficient to make the compound thin enough to be dabbed on with a dossil of lint, is to be freely applied without any rubbing. A piece of rag should be lightly applied over the ointment. While any inflammation remains this treatment should be persisted in. Afterwards the oleate of zinc ointment (to be had of the chemist) may be applied, and if the disease still resist, chrysophanic acid ointment (16) should be used; or it may, as a very efficient remedy, be used in the first instance, though it is apt to irritate if incautiously applied.

Diet.

The child's diet should be nourishing but simple, consisting chiefly of milk, light puddings, and soups.

Medicinal.

An aperient should always be given at the commencement, if there is any constipation. In any case it is well to give the red mixture (49) for four or five days to ensure the healthy action of the digestive organs. Afterwards tonics, of which the iodide of iron and cod liver oil (71) will best suit most cases, are to be prescribed; but in the event of the child being comparatively robust a vegetable bitter may prove more useful (66, 69, 72), or if the child has recently suffered from any malarial affection, steel and quinine (68) is to be preferred In cases of obstinacy arsenic (3) alone will prove of benefit. The use of pepsine (74) will much help the cure.

4. Prickly-heat.

4. PRICKLY-HEAT is an affection due to congestion of the skin from heat, and to excessive perspiration.

Cause.

The appearance is too well known to need description. As a rule no treatment is needed further than

CHAP. XLIX. Treatment.

to avoid the use of harsh flannel next the skin, but when troublesome the ordinary dusting powder, composed of oxide of zinc and starch (11), is sufficient to effect a cure or to give relief. If not, a little powdered sulphate of zinc, in the proportion of 20 grains to each ounce of the dusting powder, may prove effectual; a lotion of borax, half an ounce in eight ounces of water, is often found very useful in allaying the irritation; but the most effectual remedy of all is a solution of sulphate of copper (10 to 20 grains to each ounce of water), which should be sopped lightly upon *a limited* portion of the affected parts after the morning bath, the lotion being allowed to dry spontaneously on the surface; but copper is a poison, and must be used very sparingly, lest enough to cause trouble be absorbed. There is no truth in the assertion that prickly-heat is a good thing, and that it should not be "driven in." The fact is that it seldom appears much upon debilitated subjects, whose skins are deficient in blood; it affects more readily the healthy integument, but it in no way contributes to health; on the contrary, the function of the affected skin is, for the time being, impaired.

The fallacy that prickly-heat ought to be encouraged.

5. Herpes.

5. A Vesicular Eruption, termed SHINGLES, or *herpes*, sometimes occurs. It may appear as a number of little blebs about the lips, mouth, and forehead, especially after attacks of fever, and then it is of such a trivial nature as to require no treatment. But when a patch of rather large vesicles, filled with clear fluid, resting upon an inflamed base, passes half-way round the body as a sort of half-belt, which seldom encroaches at all upon the opposite side, is observed, we have to deal with a case of true shingles. Of course the eruption may be much more limited than this in extent, but its

Trivial kind.

Symptoms of a more severe case.

peculiarity is that it confines itself to its own side, almost never passing the spine or the breast-bone. On the fourth or fifth day the blebs dry up and form dark scabs, which fall off. The appearance of the eruption is ushered in with a good deal of fever and general disturbance, and severe shooting pains in the neighbourhood of the rash.

Care to prevent friction.

It is important to prevent children scratching and rubbing off the heads of the vesicles. If the eruption is very painful and hot, the application of cold in any shape will be found to relieve it. Mild saline laxatives (55), such as seidlitz powders (61), or the effervescing citrate of magnesia, with occasional warm baths, and the use of a plain and somewhat low diet, will frequently be found sufficient treatment. The eruption should be protected by being dusted with the oxide of zinc and starch (11), and afterwards covered with a layer of cotton wool, the air being as far as possible excluded. A course of tonics should be commenced after a few days.

Treatment.

6. Itch. Caused by a parasite.

6. THE ITCH is a contagious affection, dependent upon the presence of an animal parasite, which burrows beneath the skin and produces by its irritation the appearances which characterise the affection. The favourite positions of the parasite are between the fingers, at the elbows, and on the insides of the thighs: but in young children the hands are rarely affected, the belly, feet, and ankles being selected. Intolerable itching, particularly after the child has become warm in bed, is the most annoying symptom; the scratching which results removes the tips of the minute pimples which mark the positions of the insects, and sores may be produced, which may prove troublesome to treat.

Symptoms.

CHAP. XLIX.

Treatment.

A child affected with the itch should be isolated from all others. All clothes which he has recently worn should be boiled before being washed. All the affected parts of the skin should be thoroughly and liberally rubbed with the sulphur ointment (20) night and morning for three or four days. The child should be clad in some old flannel garments of little value, which should be destroyed subsequently.

7. Ringworm. Due to a vegetable parasite.

7. RING-WORM (*see* also p. 156) is also the produce of a parasite, which in this case is a vegetable. It is contagious, and appears either on the head or body. It occurs in circular patches, varying in size from that of a two-anna piece to that of a rupee. The surface of these patches is covered with scales of a dirty whitish colour, the margins being reddish and elevated. When the scalp is attacked, the hairs break off a little above the surface, so that patches of baldness result; but when the disease is cured, the hair grows again. On the body, ring-worm is very easily cured, but on the scalp it is generally very troublesome and persistent.

Treatment.

When situated *on the body* a small portion of the "diluted citrine ointment," as obtained from the chemist, well rubbed in twice a day, generally effects a rapid cure. If this fail, an ointment (20 grains to the ounce of lard) of salicylic acid may be substituted. Occurring *on the scalp*, the affected parts should be washed twice a day with carbolic soap and water. All hair in the vicinity of the patch should be clipped close to the skin, and the chrysophanic acid ointment (16) should be thoroughly rubbed into the parts twice a day. Should this remedy not be at hand, the patches may be painted with strong acetic acid about every third or fourth day, diluted citrine ointment being applied in

the intervals. An excellent treatment is Hutchinson's plan. He washes the scalp twice a week with the solution of coal tar known as "*Liquor* Carbonis Detergens" (one teaspoonful to a pint of water), and twice a day a little of the following ointment, which should be obtained from a chemist, is rubbed in :—

Chrysophanic acid, one drachm.
White precipitate powder, twenty grains.
Pure lanolin, one drachm.
Benzoated lard, six drachms.
Liquor carbonis detergens, ten drops.
Mix into an ointment.

Bazaar remedies.

As bazaar remedies, Dr. Waring recommends borax, one drachm dissolved in two ounces of vinegar, for an application; or the following ointment:—Sulphate of copper powdered, 20 grains; powdered galls, one drachm; lard, one ounce; mixed thoroughly and rubbed into the diseased part. He also speaks well of the leaves of the cassia (or ring-worm shrub); the plant is named by the natives dádmurdan or dád-ká-pát. The fresh leaves should be bruised with lime juice into a thick paste and thoroughly well rubbed into the affected part twice daily till a cure is effected.

Harrison gives a prescription for a *preventive pomade*, to be used by other children who reside in the same house. It is this:—

Eucalyptus ointment,
Boracic ointment,
Cocoa-nut oil,
} of each two ounces.
Oil of cloves, half a drachm.
Mixed well together.

CHAP. XLIX.

8. Pemphigus.

8. PEMPHIGUS, in one of its forms, is common in infants; commencing as small red spots, the skin soon rises into blebs, which may grow to be as large as marbles. At first the blebs are filled with clear fluid, which afterwards becomes opaque; round each there may be a slightly red zone, but practically the surrounding skin is healthy. There is a little fever. When a bleb bursts, it either forms a scab, or a rather painful little sore is left. The remedies are arsenic (3) internally, zinc ointment (17) to the sores, and a bland nutritious diet. "Unna's paste" is a very soothing application. It consists of one ounce of each of the following:—Prepared chalk, oxide of zinc, linseed oil, and lime water.

9. BOILS are too well known to need description. They are troublesome pests, difficult to relieve.

When a boil first appears we may endeavour to make it abort by carefully plucking out the little hair which is always found growing at its inflamed summit. Then paint the whole boil over with either collodion or a strong solution of caustic (one drachm of nitrate of silver to an ounce of water).* If this does not have the desired effect of reducing the inflammation, smear the surface with extract of belladonna, rubbed up with glycerine to prevent hard caking; but great care must be taken that the surface be well protected from the child's fingers, otherwise it might inadvertently convey

* "A better plan at this stage is to cover the boil with a galbanum and opium plaster (Erasmus Wilson's) spread on leather. Under this treatment pain at once ceases, the inflammation gradually subsides, and the separation of the core proceeds painlessly; when the boil discharges a hole should be cut in the centre of the plaster, for the escape of the products."—(Berkeley Hill).

the belladonna to its mouth, and produce poisoning. If the throbbing and pain be great, it will be necessary to apply a poultice, which, however, should be carefully restricted to the size of the boil itself, otherwise crops of little very painful boils are likely to appear in the neighbourhood. Before applying a poultice, it is good to smear the boil and surrounding parts with boracic ointment, to protect them from contamination. It may become necessary to request a surgeon to incise the boil. No known medicine acts as a preventive, but tonics should be given, and of these arsenic and iron (3) are the best.

## CHAPTER L.

### INFLAMMATION OF THE EYES.

CHAP. L.

Frequency.

THIS is a common, but essentially a "military" disease, the children of other Europeans in India not being peculiarly liable to it; the soldiers' children congregate together, and the disease in its severer forms being infectious, spreads rapidly among them. Native children, too, suffer largely, particularly those of the poorer classes, who live in small huts without any means of ventilation.

Causes.

Newly-born infants are subject to an inflammation of the eyes (p. 29) from causes which are, for the most part, easily preventible. Cold is capable of originating an unimportant form of the affection. Dirt, squalor, and poverty combined are the most frequent causes among native children. Debility, acting upon an unhealthy constitution, may originate a formidable sort of ophthalmia. Most cases are probably contracted by contagion.

Very contagious.

Not only is the mattery discharge of ophthalmia contagious if introduced directly into other children's eyes, as it may be by the use of a towel, common to all; but

the minute particles of matter which become detached, dry up, and, floating in the atmosphere, are capable of infecting other eyes with which they come into contact. A simple watery discharge is not contagious, but a yellow mattery discharge is generally highly so.

Symptoms.

The symptoms of ophthalmia vary considerably in severity. The affection usually commences with heat and smarting of the eye, and a sensation as though a grain or two of sand had got under the lid, causing the child to rub the organ with violence; tears flow copiously, and the thin membrane covering the white part of the ball is seen to be of a pink colour and permeated with enlarged blood-vessels. A discharge, at first watery, but subsequently semi-thick and yellowish, causes the lids to adhere during sleep. Most cases, if properly treated, will not pass this stage; but if the case become worse there is intolerance of light, so much so that the child will lie upon its bed with its face dug into the pillow. The eyelids are sure to swell considerably; indeed, the upper lids may puff out like a pair of soft balls of a purplish colour. This last-named appearance is indicative of very severe inflammation. If, at this stage, one or two little white pimples appear upon the cornea (or clear part of the eye) the case must be considered as serious, for upon bursting little ulcers remain behind, which, if deep, heal as white spots, which may interfere with clear vision. Visible blood-vessels running into the cornea show that the inflammation is very severe, and brow-ache is another bad sign. An amount of febrile disturbance commensurate with the inflammation is always present. When the child's eyelids are sepa-

Heat and itching.

Discharge of water.

Signs of severity.

Ulcers of cornea.

Fever.

CHAP. L.

rated, profuse gushes of scalding tears, with which matter is mingled, will take place. The white spots which remain after the healing of ulcers of the cornea usually diminish with time and as the child's general health improves.

Treatment.

In all cases of ophthalmia the most scrupulous cleanliness is a matter of the greatest moment. Almost

Cleanliness.

continually, washing and bathing should go on; in mild cases with simple warmed milk and water. A little sweet oil or soft simple ointment should be smeared upon the edges of the lids to prevent their sticking together and retaining the irritating tears or discharge in contact with the eye, during sleep; and

Alum and poppy lotion.

the alum and poppy lotion (23) should be used as frequently as possible, every two hours at the least, always taking care that a drop or two gets between the lids on to the eyeball. Should it so

Use no force to separate the lids.

happen that the lids adhere, no violent attempts should be made to separate them, but with the utmost patience they should be bathed with warm water or milk and water till they open of their own accord. The child should be encouraged to move about as

Fresh air.

much as possible in the open air, if the intolerance of light be not too great, the eyes being protected by a green shade; but even if there be considerable intolerance of light, the room in which the child is confined should be most thoroughly ventilated. A hot,

Diet, &c.

close room will surely aggravate the disease. The diet should always be liberal, but plain. The bowels should be kept in a state of regularity by simple laxatives, active purgation is never necessary; nor are other medicines as a rule required, unless the child is mani-

festly below par, when a suitable tonic—such as steel and quinine (68) for children who have suffered much from climate, a simple vegetable tonic (66, 69, 72) for those whose digestive apparatus is deranged, or the iodide of iron and cod liver oil (71) for those of unhealthy constitution—should be prescribed. Tonics.

The severer forms of ophthalmia, particularly when there is any appearance of ulceration of the cornea, require to be treated with stimulants, wine or brandy, strong soups, and the most nutritive diet which can be devised. The bowels should receive particular attention, the nature of the stools being examined, and, if found unhealthy, restored to normal condition by the red mixture (49). A tonic as above described should be given in all such cases. The child should be wholly confined to a darkened but well-ventilated room. In all cases, when possible, a lotion of the extract of belladonna (three grains to one ounce of water) should be dropped once a day into the eye till all acute symptoms, particularly pain and fever, have subsided. In severer cases. Stimulants and tonics. Dark but ventilated room. Belladonna.

A small quantity of the extract might in most cases be obtained by post from the nearest dispensary. It is very desirable that this should be done, because if the inflammation is extending to the deeper parts of the eye the application of belladonna is a most powerful means of checking its further progress. But it must be recollected that belladonna is an active poison, and therefore care must be taken to keep it out of the way of children, and not to smear the extract around the eye, as is often done in the case of an adult, because the child may get its finger into it and convey some to the mouth. Caution as regards belladonna.

While continuing the alum-wash as above described, caustic drops should be used as follows:—Six grains of caustic should be dissolved in three ounces of rain or Alum wash. Caustic drops.

CHAP. L.

distilled water, and each morning, after the eye has been thoroughly cleansed, the eyelids should be separated and a couple of drops of the solution let fall upon the ball of the eye from the end of a quill or little piece of stick, which should not be allowed to approach the eye too closely lest the child should struggle and cause itself an injury.*

How to obtain a view of the eye.

Great care is to be observed in opening the eye. On no account should any pressure whatever be made upon the ball; but the thumb of one hand should rest upon the cheek-bone while two fingers of the other are placed upon the brow; gentle traction can thus be made from fixed bony bases, without the possibility of pressing upon the eyeball. An ulcerated eye has been burst by pressure being injudiciously made in endeavours to force the lids apart.

Syringing the eye.

In cleansing the eye some recommend the use of a small glass syringe, whereby the secretions may be effectually washed out from under the lid. With adults and elder children, who may be relied upon to keep perfectly quiet, this means is very effectual; but with younger children I should fear to recommend it, lest a struggle inflict irreparable injury. A stream of water let into the eye from a distance of a couple of inches from a small piece of very clean sponge will answer sufficiently well, the lids being held apart as above described, during the process.

* In still more severe cases it will be necessary to apply the caustic drops twice a day. "In cases of a very mild type, one or two applications of the astringent may be sufficient; and these may be supplemented by the use, in the same manner, of a solution of cocaine with boric acid. A good formula for this purpose contains two grains of cocaine hydrochlorate and four of boric acid, to the ounce of distilled water" (Brudenell Carter).

## CHAPTER LI.

### INFLAMMATION OF THE EAR.



Description of ear.

THE ear, as is well known, is of the nature of a drum. There is an external curved tubular opening, which is terminated by a tense thin membrane: from the back of the throat comes the Eustachian tube, which admits air to the other side of the membrane. The first of these divisions is termed the *external* ear, which conveys the sound to the drum and causes it to vibrate: and the second, for our purpose, may be called the *internal* ear, which is also supplied with the machinery by which the sound is conveyed to the brain. When the internal ear is closed by the enlarged tonsils of a sore throat, temporary deafness results, because the air confined in the space will bulge the drum out and prevent its free vibration.

Inflammation. 1. External ear.

1. *Inflammation of the External Ear* may be occasioned by cold, accumulated wax, by the presence of foreign bodies, or it may succeed measles or scarlatina.

Symptoms.

The symptoms are simple: a throbbing heat and itching, pain when the point in front of the external opening is pressed upon; increased pain at night, feverishness and restlessness. Moving the jaw, crying, and sneezing increase the pain. The interior of the ear will appear red and swollen, and from it, after a

CHAP. LI.

short time, a thick discharge is secreted. The pain greatly diminishes with the appearance of the discharge, which after a time becomes watery.

Treatment.

The removal of a foreign body (Chap. LVI.) will naturally suggest itself if any be present. Superfluous wax

Syringing.

should be got rid of by gentle but persistent syringing with warm water, and glycerine should be dropped within the ear subsequently, still further to soften the

Spare diet.

wax for the next syringing. The child should be put upon a spare diet, and moderate purgation induced.

Fomentations.

Warm poppy-head fomentations should be assiduously employed, and succeeded by hot linseed-meal or bread poultices. The very gentle injecting of warm water will remove the accumulated discharge. But should the inflammation degenerate into a—

2. Chronic. Requires great attention.

2. *Chronic Discharge* from the ear, it calls for very serious attention, for if it be allowed to run on indefinitely the bones inside the ear may be denuded of their covering, and become diseased, thus carrying danger to the brain. A mother should never allow an ear discharge to continue, notwithstanding any tales she may have heard regarding the dangers of checking it.

Treatment. First cleanse the parts.

The ear should first be syringed for the purpose of cleansing it thoroughly, and then an examination of the tube should be made in a good light. By pulling the lobe of the ear forwards between the finger and thumb, the curvature of the tube will be removed, and a much

How to examine the ear.

better view obtained. A portion of a visiting card rolled into a cone, and slightly oiled on the outer side, will assist the view, if inserted gently. Should a piece of flesh (called a

"polypus") be found obtruding into the tube, surgical aid alone can avail: but a foreign body, such as a pea or a piece of stone, or a quantity of hardened wax, may also be discovered. The former should be removed by the means described in Chapter LVI. (3), and the latter by repeated syringing and the application of glycerine.

Tonics.

Nearly always the general health is affected in these cases, wherefore a tonic, such as steel and quinine (68), or iodide of iron and cod liver oil (71), is needed from the commencement.

Application.

With gentleness the ear should be syringed out twice a day with warm water, to which rectified spirit of wine has been added in the proportion of a teaspoonful to half a tumblerful, after which a drop of carbolic oil (1 in 40) or the glycerine of tannin (26) should be allowed to fall into it, or a camel's hair pencil may be used to anoint the sides of the tube with one of these applications. In the absence of the above, a solution of alum or of tannic acid (6 grains to 1 ounce of water) may be similarly used, but as the object is to prevent decomposition of the discharges, these solutions are not so useful. Then the orifice should be gently plugged loosely with a soft pellet of salicylic wool. A single sedative draught containing laudanum (*see* Opium) may, if necessary, be given to relieve severe pain.

Blister.

Should the case still prove obstinate, a small blister may be applied behind the affected ear.

3. Inflammation of internal ear.

3. *Inflammation of the Internal Ear* is extremely painful. It is accompanied with much fever, and sometimes with convulsions. Hearing is interfered with, there is headache and buzzing in the ears. The orifice of the small tube communicating with the

Symptoms severe.

CHAP. LI.

mouth becomes blocked up, the matter which forms is therefore pressed forcibly against the drum, which, is very apt to be ruptured, and thus immediate relief is sometimes obtained: but irreparable mischief has been inflicted. In the absence of medical aid all the parent can do is to follow the instructions given upon the previous pages in so far as they are likely to be useful; but as soon as the condition is recognised every endeavour should be made to place the child under the care of a surgeon, for not only may permanent deafness result by the breaking of the drum, but more serious injury may be inflicted by the bones becoming implicated and originating a brain affection, or causing *paralysis of one side of the face.* When the latter event succeeds a discharge from the ear and deafness, it is serious, but it is right to explain that the same symptoms may result from exposure to cold and damp, and that then the affection is comparatively trifling, tending to a natural recovery.

Management.

Seriousness of neglect.

## CHAPTER LII.

### BRUISES, BLEEDING, WOUNDS, BURNS AND SCALDS, AND SPRAINS.

#### (1) BRUISES.



Cause of "black and blue" appearance.

WHEN a part is bruised it turns "black and blue," because the minute blood-vessels beneath the skin have been ruptured by the force employed, and the blood flows into the loose fat which underlies the skin. The more blood that has been thrown out, the greater the intensity of the colouration. If, in addition to discolouration, there is heat of the part, then inflammation accompanies the bruise.

Treatment.

By treatment we endeavour to prevent any more blood being effused, to prevent or allay inflammation, and to induce absorption of the blood already effused. The application of cold in the shape of ice, or of a cold lotion (13, 35), will usually effect the first and second of these objects. The arnica lotion (14) will accomplish the latter and subdue pain. A piece of folded rag, saturated with the lotion, should be firmly and evenly bandaged upon the injured part. Leeches should never be applied to a bruise, they only increase

CHAP. LII.

all the mischief. Subsequently, when only some hardness and discolouration remain, rubbing the part once or twice daily with the soap liniment (12), or with brandy and oil mixed in equal parts, or with a stimulating liniment (18), will prove useful. Rest and elevation of the injured part should always be adopted.

### (2) BLEEDING.

Means of checking.

Bleeding from wounds is usually unimportant and rarely dangerous. (1) Pressure and (2) cold are the two chief means by which bleeding may be arrested; but there are medicaments known as (3) stypics, which are also often very useful; and finally there is (4) the ligature.

Adaptation of edges of wound.

It is usually found that when the edges of a wound have been brought together, and the part firmly but not too tightly bandaged, all bleeding ceases or nearly ceases; any little oozing may be stopped by the application of cold water or ice.

Pressure of a pad.

Should these means not prove sufficient, a thick small hard pad of linen placed over the bleeding spot, and secured there by a firmly-adapted bandage, will nearly always completely staunch the flow. By-and-by the tightness of the bandage may be relaxed, say after two or three hours; but should bleeding then recur, it will be necessary again to tighten it, taking care that the limb be bandaged from its extremity upwards to beyond the wound.

Wound of an artery.

Should a jet of blood spout from a wound: at once press the point of the finger upon the bleeding spot, and keep it there till preparations are completed for dressing the wound properly, when by placing the edges in apposition, and adapting a pad as above

described, success will probably be attained. Cold should then be applied, and the child should be kept extremely quiet for a couple of days, during which time the pad, if removed for the purpose of cleansing and dressing the wound, should be replaced with the original care, but diminished pressure.

Ligature may be necessary.

Should a jet of blood issue forcibly the instant the finger is removed, a ligature should be applied. By means of a forceps or pair of tweezers seize the piece of flesh from which the blood is issuing, including, of course, the bleeding orifice—a portion about so large A only, need be pinched up. Then, while still holding it tightly with the forceps, a piece of thin cord or stout silk should be passed around the raised part at the place shown by the dotted line, and tied as tightly as possible by an assistant: one end of the cord should be cut off short, and the other left hanging from the wound. In a few days it will become detached, and allow of removal.

When impracticable use tourniquet.

Should it be impracticable to apply a ligature, a handkerchief should be tied around the limb between the wound and the heart, while pressure with the pad is still to be made upon the wound itself. It may be difficult to tighten the handkerchief sufficiently; in such a case, by passing a short piece of stick underneath and giving it a few twists round, tightening to any extent may be made. But it is dangerous to keep up a severe tightening for any length of time; the circulation is thus stopped, and mortification might ensue. Very severe tightening is seldom essential, and if it be, gradual loosening should be made after a short time, to ascertain how far the handkerchief may with safety be relaxed.

Danger of too prolonged constriction.

CHAP. LII.

Oozing of blood.

Oozing from a cut or torn wound usually yields to the free application of cold, but should it persist notwithstanding, the surface may be sopped with a strong solution of alum or of tannin, or in case of urgency with the pure tincture of steel.

Bleeding from a vein.

Bleeding from a vein is known by a copious continuous flow of dark-coloured blood. This is not of anything like the same seriousness as bleeding from an artery. Pressure and elevation are almost always sufficient to arrest it. Should direct pressure upon the wound not prove sufficient, then pressure should be made with the handkerchief and stick between the wound and the end of the limb—that is, *below* the wound, not above it.

### (3) WOUNDS.

Classified.

*Wounds* are divided into (1) clean-cut or incised wounds, (2) lacerated or torn wounds, and (3) punctured wounds.

1. Incised.

1. *Incised* wounds are easily treated unless they bleed much, in which case the means just enumerated

Check bleeding.

are to be employed to check the hemorrhage. The

Clean the surface thoroughly.

next thing to be done is to cleanse the surface most thoroughly, and to remove all particles of foreign substances, such as pieces of gravel or glass. For this purpose a stream of cold water and a piece of clean rag (not sponge) are to be used. It is a matter of great importance that the rag employed be thoroughly clean, otherwise unhealthy inflammation or even erysipelas may be brought on. Carbolic acid (24) or Condy's fluid should be added to the water; the strength of the carbolic solution should not exceed one part to sixty of water, indeed one to one hundred will suffice.

Bleeding having been checked, except perhaps some little oozing which will remain while the wound is open, the sides are to be brought accurately together In simple cuts a strip of sticking-plaster or of court-plaster to keep the edges together will be sufficient. Sticking-plaster should never be made to encircle a limb wholly, yet the strips should be sufficiently long and broad to grasp the skin firmly. Each strip must be attached first to one side of the wound, then the free end is to be pulled firmly with one hand (while the other hand is employed keeping the wound together) and fixed firmly on the opposite side. Unless the cut be very small, each strip had better be about half an inch broad and sufficiently long to go a little more than half-way round the limb. When preparing the strips it is a good plan to double each upon itself and cut a piece as in Fig. A, from its centre, so that when opened it will appear as in Fig. B, the aperture being placed directly over the wound to permit the escape of any discharge and thorough cleansing. Each strip when applied should slightly encroach upon the edge of its neighbour. Then place a strip of lint soaked in carbolic oil length-ways over the openings, and adapt a bandage over all with just sufficient tightness to support the parts thoroughly. If painful, cold water, to which Condy's fluid has been added, may be applied to the bandage. The sticking-plaster need not be removed till it has become loose, in which case the sides of the wound, if not already united, should be held together till the plaster be renewed.

Adapt edges.

How to apply sticking-plaster.

FIG. A.

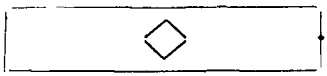


FIG. B.

Bandage.

Cold, if inflammation.

CHAP. LII.

Wounds of palm of hand.

Wounds of the *palm of the hand* may be accompanied with severe bleeding. The best thing to do, pending the arrival of a surgeon, is to place a hard wooden ball or a cork in the hand, which should then be closed and bandaged firmly upon the ball or cork, while at the same time the elbow should be bent as much as possible, and so retained by means of a bandage.

2. Lacerated, liable to suppuration.

2. *Lacerated* wounds seldom bleed much, but they are especially liable to inflammation and suppuration. There may be a great deal of difficulty in thoroughly cleansing them, but this must be effectually and patiently done, the carbolic lotion (24) being employed for the washing. The deeper parts, if they cannot be got at, ought to be syringed out with the lotion. This done, we may bring the edges together with sticking-plaster as before, except that the plaster is not to be pulled so tightly, lest the escape of matter be impeded. A piece of lint, doubled twice upon itself, and saturated with carbolic oil (25), should now be applied so as to cover more than the extent of the wound; over this a piece of plaintain leaf, oiled silk, or gutta-percha tissue is to be laid, and the whole bandaged loosely.

Do not confine the matter.

Should the discharge become very free, and the wound smell, every second strip of plaster should be removed, and the wound syringed out twice daily with the carbolic lotion or carbolic oil. Should the edges become red, livid, and pouting, the discharge being copious and offensive, it is better to remove all the dressings, and after thorough syringing to apply a large poultice with which powdered charcoal has been mixed. When once again healthy in appearance, that is, of a

Syringe with carbolic lotion.

A poultice may be necessary.

bright red colour and presenting a clean surface, antiseptic water-dressing only need be applied. CHAP. LII.

3. *Punctured wounds*, that is, wounds which are produced by sharp, long, narrow instruments penetrating the flesh, such as might be caused by treading upon a nail, or falling upon a splinter of wood, are often troublesome. The great thing is to allow the orifice to remain completely and freely open, not necessarily to the air, but for the free discharge of matter. Of course, should any portion of a foreign substance remain imbedded in the wound, every endeavour should be made to remove it with the forceps, the orifice being enlarged for that purpose if necessary. Boracic or carbolic lotion should then be injected into the wound, and carbolic water-dressing applied; and when healing, a folded piece of lint, saturated with carbolic oil (25), should continually but loosely cover the aperture.

3. Punctured.

Allow free exit to matter.

Inject carbolic lotion. Poultice.

Carbolic oil.

## BURNS AND SCALDS.

*Burns and Scalds.*—A severe burn or scald is chiefly dangerous on account of the shock it occasions to the whole system. The great pain is accompanied with violent shivering, a pallid face, and cold hands and feet.

Great constitutional shock.

The amount of danger to be apprehended from an injury of this kind is dependent of course upon its extent, but the depth to which it has penetrated is also of importance. The nearer burns are to the centre of the body the greater the danger, and the most dangerous period is the first five or six days after the accident. But it is not only the immediate danger

Dangerous situations and times.

CHAP. LII.

that has to be considered; there are others of a more remote nature to which the accident renders the child liable; these are, ulceration of the bowels on about the tenth day, producing serious inflammation of the abdomen; and inflammations of the head or chest, which may occur a little later on.

Remote dangers.

Treatment, objects of.

In treating a burn there are three matters requiring immediate attention, viz., to relieve the pain, to counteract the shock, and to protect the injured surface from contact with the air. *If the patient be seen immediately* after the accident, give a dose of wine into which laudanum to the extent of one drop for each year of age has been put. Then the instant application of a saturated solution of bicarbonate of soda will relieve pain on the spot and prevent blistering. This remedy is only of use if employed without any delay; wherefore, if the soda be at hand it is better not to wait to make a solution, but moisten the soda a little and smear it on as a paste, adding water drop by drop subsequently. *If the above cannot be done,* either on account of delay in seeing the case or the absence of soda, deluge the parts with Carron Oil (which is made by shaking together equal parts of lime-water and any bland oil, such as sweet or linseed oil, till they form a thick white emulsion); or should there be any delay in obtaining this, dust the parts thickly over with flour, or use sweet oil alone.

Administer a stimulant with opium.

Apply soda.

Apply Carron Oil.

Or flour.

Application should be antiseptic.

It is much better to add an antiseptic to the Carron Oil with the object of preventing decomposition of the discharges. Carbolic acid is the most likely to be at hand, and if the surface involved be not extensive, it should be added in the proportion of two teaspoonfuls to each pint, but if a large part of the body has been burnt it would not be safe to cover it with a carbolic solution (*see* Carbolic

Acid). If flour has been used, the addition of one-fifth part of boracic acid powder meets the requirement. If these additions involve delay it is better to reserve them for the second dressing; or the antiseptic oil might be afterwards poured over the original dressing.

With cotton wool.

Whichever application is used, the whole parts should be at once enveloped in large quantities of cotton wool, kept in position by very lightly-applied bandages.

Carron Oil to be preferred.

Should flour have been employed, it is well to prepare the Carron Oil at leisure, and to apply it subsequently, because when the blisters burst, their fluid mixing with the flour forms a hard, dirty cake, which is difficult of removal.

Warmth.

The child should be put to bed as soon as possible, with hot bottles wrapped in blankets applied to his feet and sides. More wine may be administered if the shivering and depression continue, and as soon as possible a little warm beef-tea should be given.

More stimulant if necessary.

Beef-tea.

Cut off the clothing.

The greatest gentleness is required in handling the child lest the injured surface be abraded. The clothes should be removed by cutting them off with a pair of scissors, piecemeal, taking care not to expose a large surface to the air at any one time.

Prick the blisters.

When blisters appear they are to be pricked with a needle, great care being taken not to remove the elevated skin.

Length of time the first dressings remain.

The first dressings are not to be removed till necessity obliges for cleanliness sake; every time the surface is dressed, there is, of necessity, a fresh exposure to the air, the very thing we wish to avoid.

Mode of dressing.

In removing the dressing, if the surface injured is extensive, the removal and renewal should be done piecemeal. The

CHAP. LII.

less often the burn is dressed the better; and before the old dressings are removed the new ones ought to be quite ready to be put on.

Caution as to over-stimulation.

It may be necessary to repeat the administration of stimulants once or twice within the first twenty-four hours, but reaction will by that time probably have been fully established, and therefore we must be very guarded in the exhibition of wine lest the excitement produced prove injurious.

Subsequent dressings.

The Carron Oil may be employed till the healing be well advanced, when the zinc ointment (17) or resin ointment (21) may be substituted for it, an occasional change for a day or two to a turpentine application (22) being often beneficial.

Proud flesh.

Should proud flesh, elevated above the line of the skin, form, such places should be touched lightly every second day with the solid bluestone (sulphate of copper).

Position of the limbs.

The liability to contractions occurring during the healing of a burn should always be kept in mind. A limb should invariably be bandaged in the straight position.

Mr. Swain considers the *collodium flexile* of the Pharmacopœia to be "by far the best local application for burns. This should be painted on smoothly with a large brush. It will frequently prevent vesication, if it has not already taken place. If there are vesications the serum should be let out through small openings, and the surface painted over with collodion."

### (5) Sprains.

Nature.

A sprain is a twist of a joint, which stretches and perhaps partly tears the ligaments which bind the bones together.

CHAP. LII.

Symptoms.

Upon the occurrence of the accident there is a sickening pain experienced, and there is inability to bear weight upon the limb; swelling succeeds, and perhaps the skin becomes "black and blue." If a sprain be neglected, chronic inflammation of the joint may succeed, which may result in permanent stiffness of the part.

May inflame joint.

Treatment.

The great principle upon which a sprain is to be treated is, rest. As soon as possible after the accident, immerse the injured foot or hand in a basin of hot water for ten minutes, and then in a basin of cold water for a similar period. Then apply a wet bandage rather tightly from the toes or fingers well up beyond the injury; put the child to bed, and insist upon the most perfect rest. The bandage should be wetted at intervals with water or the arnica lotion as in the case of a bruise; and when the acute inflammation has passed away, a plaintain leaf is to be applied over all to prevent the injured part becoming dry too rapidly. When all pain and inflammation have subsided, the joint should be rubbed with a stimulating liniment. Caution should be observed in allowing the child to resume play.

## CHAPTER LIII.

### SNAKE-BITES, STINGS OF INSECTS, AND BITES OF ANIMALS.

CHAP. LIII.

Not so invariably dangerous as supposed.

"SNAKE-BITES are always productive of alarm, but they are more rarely dangerous than is supposed, because they are generally inflicted by innocent snakes" (Ewart).

Fayrer's directions.

The following remarks as to treatment are summarised from Sir J. Fayrer's work:—

(1) Apply ligature.

(1) Apply at once a ligature of cord around the limb, about two or three inches above the bite. Introduce a piece of stick under the ligature, and by twisting tighten it as much as possible.

Twist with stick.

(2) Three other ligatures.

(2) Apply two or three other ligatures above the first one, at intervals of a few inches, and tighten them also.

(3) Scarify.

(3) Scarify the wound, by cutting across the tooth-puncture to the depth of a quarter of an inch, and let it bleed freely.

(4) Burn the wound.

(4) Apply either a hot iron or live coal to the bottom of these wounds, or explode some gunpowder upon the part, or allow a few drops of pure carbolic or nitric acid to fall into the incisions.

(5) Suck the wound.

(5) If the patient himself, or any one else, will suck the wound forcibly, while the fire or caustic is being obtained, so much the better.

(6) If the bite be on a part where a ligature cannot be applied, pinch up the skin over the bite, and cut out a circular bit as large as the finger-nail, and from ¼ to ½ an inch in depth. Then to the raw surface apply a live coal or carbolic or nitric acid as stated, or explode gunpowder in it.

(6) If ligatures impossible, cut out part and burn.

(7) Keep the patient quiet, but administer brandy and sal volatile every quarter of an hour, to the extent of three or four doses. Intoxication should not be induced.

(7) Quiet. Brandy. Sal volatile.

(8) Should no symptoms of snake-poisoning appear in half an hour, the ligatures should be relaxed, or the parts will mortify from the strangulation. If, however, poisoning symptoms appear, the ligature should not be relaxed until the patient is recovering, or the parts become cold and livid.

(8) When to relax ligatures.

(9) If the patient become low, apply mustard poultices and hot bottles. Encourage and cheer the patient, stimulate him throughout. Keep him quiet, and do not make him walk about.

(9) Mustard poultices and hot bottles. Cheer patient.

Fayrer has recorded many instances where serious symptoms of prostration have been wholly due to fear, the snake which had inflicted the bite having been killed and proved to be harmless. There is, too, another hope: an exhausted snake, one which has recently bitten at other objects, is but feebly poisonous for the time, though perhaps deadly by nature.

Symptoms due to despair.

Snake may be innocent or exhausted.

"The measures suggested are, no doubt, severe, and not such as under other circumstances should be entrusted to non-professional persons. But the alternative is so dreadful that, even at the risk of unskilful treatment, it is better that the patient should have this chance of recovery."

Severe measures necessary.

CHAP. LIII.

## STINGS OF VENOMOUS INSECTS

In young children may not be altogether unattended with some danger.

Treatment.

Tie a ligature above the place if possible. Extract the sting if it can be seen, suck the wound, and then apply liquid ammonia, which will at once relieve a *wasp* sting. Sal volatile will also answer, but not so quickly. If neither are at hand, use a strong solution of bicarbonate of soda or carbolic oil. If swelling has already set in, do not use the ammonia, but the soda solution on a rag.

*Mosquito* bites are relieved by the application of oil of peppermint, and the oil of eucalyptus is a good preventive. For the inflammation which sometimes follows these bites a poultice of ipecacuanha powder and mint leaves is very good, or ipecacuanha alone made into a paste.

For *scorpion* stings or *spider* bites, ligature as above, suck the part and apply a drop of carbolic acid. If the acid be put into a little cut made into the punctured spot so much the better; afterwards poultice with ipecacuanha paste. Sal volatile and brandy should be given if there is faintness in any of the above cases.

## BITES OF ANIMALS.

Needless alarm.

But a very small proportion of dogs or other animals which bite people, are affected by hydrophobia; and even of all persons who have been bitten by undoubtedly rabid animals, not half suffer from hydrophobia.

When a bite is inflicted through clothing, it is not nearly so dangerous as when a naked part has been bitten.

The dog, the jackal, the wolf, the cat, and the fox are the only animals known to suffer from hydrophobia. A dog which has bitten a person should not be killed at once, because it will then be impossible to determine whether the animal really was or was not mad at the time of the attack,—a matter which may be decided very soon if the dog be tied up and allowed to live.

Animals liable to hydrophobia.

Dog should not be killed.

Immediately after the bite the wound should be well sucked. Caustic should then be applied, a little water dressing put on, and no more thought of the matter. If, however, there be evidence that the dog is mad, and if the patient be seen immediately, the best thing to do is to proceed precisely as directed under Nos. 3, 4, 5, and 6, for the treatment of snake-bite, except that the ligature need not be kept on longer than after the application of the cautery or caustic, nor is it necessary to apply more than one ligature. A thin stick of caustic inserted directly into the bite down to its bottom is an excellent proceeding. A stout iron wire, heated and driven to the bottom of each tooth wound, is also an effectual mode of cauterising the wound; strong carbolic acid, if it penetrate to the very bottom of the wound, is equally efficient and much less painful. It must be recollected that the wound is much deeper than that inflicted by the snake, and that, therefore, the incisions must be deeper, and the caustic very effectually applied.

Treatment.

Suck the wound.

Ligature.

Burn or caustic or excise the part.

The caustic must penetrate to the bottom of wound.

If the friends of a patient who has been bitten by a rabid animal can afford to send him to the Pasteur Institute at Paris, it is an obvious duty to do so; and the sooner the better, because the results attained are proved to bear a ratio to the quickness with which treatment is begun. The course in Paris extends over a fortnight.

Pasteur's treatment.

CHAP. LIII.

There can be no doubt as to the success of M. Pasteur's grand discovery, which has been the means of saving many persons from premature and painful death. In the event of the wound not having been energetically treated without delay at the time the bite was inflicted, it becomes a matter of special anxiety to subject the patient as speedily as possible to Pasteur's treatment.

## CHAPTER LIV.

### FRACTURES.



Signs of fracture.

A BONE is known to be fractured when there is unnatural mobility in its length, when there is such deformity of the limb as could not occur unless the bone were broken, and by the sensation of grating produced by the broken ends rubbing together when the limb is grasped both above and below and slight movement made.

Caution as to movements.

When it is suspected that a bone is broken, the greatest care must be taken, lest by incautious movements one of the ends be made to penetrate the skin.

Management. At moment of occurrence.

The moment after the accident the limb should be gently drawn down; and if the patient is at any distance from home, a dozen or so straight bamboo twigs should be cut and rolled in grass or pieces of cloth (a native's puggary, for instance, torn into pieces), and placed at intervals around the limb, and there secured by tying them with a couple or three pocket-handkerchiefs moderately tight. This done, the child may with safety be carried home, and a surgeon summoned. The straw cases in which wine bottles are usually packed, serve excellently for these temporary splints, one being placed at either side of the fracture.

CHAP. LIV.

If surgical aid not available.

Assuming that it be not possible to obtain surgical aid:—The child having been placed upon a perfectly level and rather hard bed, an assistant should grasp the sound part of the limb above the fracture, while

"Set" the fracture.

the operator gently and slowly but firmly pulls from the lower end in the straight direction of the limb, that direction which is natural to it, all jerking being avoided. The limb is thus brought into its natural position, a fact which may be verified by comparison with the opposite limb. The sooner after the occurrence of the accident that reduction is made the more easy will it be of accomplishment.

Apply splints.

The next step is to retain the injured limb in the natural position to which it has been reduced, by means of splints, which must be sufficiently firmly applied to insure immobility, while pressure on prominent points must not be too great. The most simple form of splints consists of pieces of thin light board cut to about the length of the broken bone. One of these, well padded, should be placed at either side of the broken limb, and if desired a third may be placed behind for it to rest upon. With three straps or pieces of bandage they should be bound firmly, but not too tightly, in position around the limb.

Objects of treatment.

If the broken bone has been reduced to perfect position, and if it be, during the remainder of treatment, retained in this position without the possibility of any movement, nothing further is required; nature will do the rest.

Splints not moved till union has taken place.

It may be necessary to tighten the straps or bandages from time to time: but the splints should not be removed, or even loosened, for ten days or a fortnight,

and not even then except in case of necessity. It will be necessary to wear splints for about three and a half weeks.

Inflammation in the neighbourhood of a fracture is to be subdued by the application of cold lotions, or ice, or by irritation (that is, a basin of water is to be placed on a stand higher than the limb; into the water is put a skein of cotton, which is allowed to hang over the edge; the water will drop rapidly from the cotton upon the part, producing great cold).

Inflammation subdued by cold or irritation.

These directions are of the simplest nature; many fractures require special apparatus, but the limits here available do not permit of more than the most general allusion to the subject. In all cases it is very desirable that a surgeon should inspect a fracture as soon after its occurrence as possible, even though a few days should have to elapse.

Many fractures require special treatment.

A compound fracture, that is, when the broken bone has penetrated the skin and made a wound which communicates with the break, is to be treated in the same way—by reduction and splints—the wound being treated upon general principles (*see* Wounds), the most important of which is thorough cleansing with carbolic lotion or Condy's fluid solution in the first instance, and afterwards sealing it with carbolic oil on lint.

Compound fractures.

## CHAPTER LV.

### INJURIES OF THE HEAD.

CHAP. LV.

Not so serious in childhood.

CHILDREN bear blows upon the head with extraordinary impunity as compared with the adult.

A severe blow will render a child giddy and confused, or it may completely stun him. A very severe blow may produce insensibility of a most serious nature, the child lying cold, clammy, and pale, with a feeble, slow pulse, and an eye insensible to light.

Symptoms of concussion. Trivial and severe.

After a time, varying with the force of the blow from a few minutes to perhaps several hours, he begins to revive, the skin becoming warmer and the pulse stronger. Then vomiting, which is always a good symptom, sets in, and sensibility gradually returns. Of course improvement may not take place, the patient may go on from bad to worse, or there may be partial recovery, succeeded by symptoms of inflammation of the brain (*see* Head Symptoms, p. 345).

Treatment. Initiate reaction.

At first the child should be laid in a warm but well-ventilated place, mustard plasters should be applied to the calves of the legs, the arms and body should be rubbed with brandy or turpentine or a stimulating liniment (18). A couple of grains of calomel are to be placed upon the back of the tongue, a purgative enema (44, 45) administered, and cold applied to the head (13, 35, and p. 177).

Purge.

Cold to head.

So soon as symptoms of revival set in, give a warm drink of tea or milk, to which a little sal volatile may be added, or the latter may be given alone. Do not administer brandy or wine. An aperient powder (56) may next be given, and the rest of the treatment resolves itself into perfect quietude in a darkened and cool room, a very light and simple diet, preserving the bowels in a state of laxity, and keeping cold to the head, until the child has completely revived. For some time subsequently care should be taken to prevent the child joining in active or boisterous play, to keep the bowels open, to avoid exposure to the sun, and to maintain a simplicity of diet.

Upon revival a warm drink but no brandy.

Aperient.

Quiet in dark room.

Purging.

Subsequent precautions.

Should inflammation of the brain occur, the treatment should be conducted as laid down on page 348.

## CHAPTER LVI.

### ACCIDENTS WITH FOREIGN SUBSTANCES.

#### (1) SWALLOWING FOREIGN SUBSTANCES.

CHAP. LVI.

Rounded substances not serious.

Avoid purgation.

MARBLES, plum-stones, and such like rounded substances are frequently swallowed by children, but such an accident need not cause any alarm. The substances thus swallowed will become impacted in the fæces and pass with the ordinary stools. In these cases it is not a good plan to give aperient medicines; on the contrary, a diet of a constipating nature ought to be adopted, so that the substance may become impacted and be thus carried along the bowel. Purgatives delay the expulsion by rendering the fæces so fluid that they pass over the heavier substance, which subsides and remains stationary.

Substances of injurious nature.

Emetic, if seen at once.

A button, a copper coin, or other smooth substance which is likely to produce harm because of its nature, may safely be removed by an emetic, if we learn of the accident immediately after its occurrence, and sulphate of zinc (41) is the best medicine then to give, but mustard will also answer very well (*see* Emetics). If too long a time has elapsed to allow of the emetic being of use, or if the substance be pointed or angular, we must treat the case as above, on the constipation plan, astringent medicines being employed if necessary. The chances of injury ensuing will then be very slight.

Otherwise encourage constipation.

A pin swallowed.

It is a common occurrence that a pin placed in the mouth, accidently slips down the throat. "Not unfrequently this happens with children; and the mother, in her anxiety to do something, immediately doses the little patient with castor oil, and *then* seeks medical advice. In such an accident it is far better to avoid purgatives; and rather allow the patient to eat plentifully, so that the foreign body may have the best chance of being carried through the intestinal canal, imbedded in and surrounded by fæculent matter. It were better to encourage costiveness than establish relaxation of the bowels" (Geo. Pollock).

Purgatives dangerous.

Encourage constipation.

When a substance sticks in throat.

Should it happen that any substance has stuck in the back of the throat, the occurrence will be notified by immediate symptoms of distress and alarm. In such a case the child should be placed with its face to a good light, its mouth having been opened, a piece of cork or wood should be placed between the back teeth and the substance looked for. If it can be seen, it may be grasped with a forceps and removed. If it is not visible, it should be felt for with the finger passed well down the throat, and if detected it may be worked loose if it be a small object such as a fish-bone or the like; or sickness may be induced by putting the finger down the throat, and thus the offender may be rejected, or an emetic may be given with the same object.

Use forceps.

Or finger.

Or emetic.

### (2) Foreign Substances in the Air-Passages.

Happily infrequent.

Instead of passing into the gullet or stomach passage, the substance may enter the windpipe or passage to the lungs. Fortunately the air-passage is so

CHAP. LVI. effectually guarded by a peculiar valvular arrangement
Most serious. that such accidents are not common, but they are always serious.

Symptoms. There is, when the accident happens, an immediate sense of impending suffocation, the difficulty of breathing may be most intense, and a spasmodic cough occurs. Sudden death may possibly happen. When the substance has taken up its permanent position a calm ensues, and the subsequent symptoms will depend upon the position occupied; but they are sure to be very distressing, and fraught with danger.

Treatment. Unfortunately there is nothing that can be relied upon as efficient treatment within the power of the
Send for surgeon. parent. Instantly a surgeon should be informed of the occurrence, with a view to his performing an operation if necessary.

Invert the body. In the meantime place the child upon its back upon a small table, and standing at its feet, grasp them against the edge and turn the table up, the child's head being thus downwards, till nearly at right angles to the ground. When in this position let an assistant
Excite vomiting. endeavour to excite vomiting by passing a feather into the throat; and then turning the child partly over, while still in the hanging position, let him be slapped
Slap the back. firmly upon the back. These measures failing, after a full and fair trial, it is best to put the child to bed in
Do not attempt too much. whatever position it seems most at ease, and await the surgeon's arrival.

### (3) Foreign Substances in the Ear and Nose.

Foreign substances should be removed from either of these situations, provided no pain be occasioned to

the patient in doing so. "When it is remembered that if left alone the foreign body generally becomes loosened, and escapes without surgical interference of any kind, we have a very strong argument against the adoption of any means involving suffering" (Holmes Coote).

Violent efforts unjustifiable.

The *ear* tube is widest at its outer part, it narrows in the centre, and as it approaches the drum it again becomes wide. As a child seldom manages to introduce a substance beyond the narrower portion, great care must be taken not to thrust it further back in the efforts at removal, for not only is the difficulty of extraction then greatly increased, but by pressing upon such a delicate membrane as the drum, ulceration and penetration may possibly occur, and the substance passing into the internal ear may there cause inflammation, or even disease of the bone.

The ear tube.

Danger of pushing past the narrower part.

Seeing that such serious consequences may possibly happen, and that nevertheless there is not the slightest need for hurry or alarm as to immediate consequences, the best plan, when far from medical aid, is to make gentle efforts to remove the substance, and, these failing, to send the child to a surgeon. If the substance be visible, and if it present a rough surface which can be grasped, it may be extracted with the forceps. In the case of a small and round substance, the effects of position may as well be tried, by placing the child upon its side upon a table, and then raising the legs of the feet end about one foot from the ground. Neither of these simple plans succeeding, it is better to restrict further efforts to the use of the syringe. First drop some oil into the ear, and insert a small

No need for hurry, therefore only gentle efforts to be made.

With forceps.

Position.

Syringing.

CHAP. LVI.

pledget of cotton, saturated with oil, gently into the orifice. Three or four hours having elapsed, the wax will have become softened; then some warm soapsuds are to be injected with moderate force, rather in the upward direction, in the hope that the stream getting behind the substance will force it out of the ear, as it very frequently will do.

The nozzle of the syringe should not be introduced within the ear, but should be held a short distance off the orifice.

The nose.

Foreign substances in the *nose* cannot excite the same dangers as in the former situation. "Let it be remembered that, in children especially, there is no cause for anxiety or haste; the extraneous body will work its own way out, the surrounding parts receding so as to widen the passage by which it entered" (Holmes Coote). A discharge from the nostril must of course occur, and it will probably be of a fetid, mattery nature, necessitating the use of a little Condy's fluid lotion. Unless the substance can be grasped, and removed by the forceps, it is better to wait quietly till the services of a surgeon are obtained. There is not the slightest need for hurry.

The substance will loosen itself.

If not removable by forceps do not interfere further.

## CHAPTER LVII.

### RUPTURE.



Definition.

By rupture is meant a protrusion of a portion of intestine through the muscles of the belly, causing a soft swelling underneath the skin.

Varieties.

There are two common localities of rupture—(1) at the navel, and (2) at the groins. Children are often born with ruptures.

1. Navel rupture.

Symptoms.

Either at the time of birth or shortly after the separation of the navel-string, a soft, round swelling may be observed at the navel. The swelling subsides when the child is placed upon its back, but a fit of crying or sneezing will cause it to reappear. Gentle pressure with the fingers will push back the protrusion out of sight, and then probably the circular edge of the opening through which it has passed may be felt with the tip of the finger. There is no pain of any kind.

Groin rupture.

Groin rupture is usually confined to male children. The mother notices that the scrotum of her infant is of unusual size, that it is soft, compressible, and often semi-transparent. At times, when the child is at rest, the swelling wholly disappears, again to show itself when he cries.

There is usually no danger attending these cases in infancy, but if not then cured by simple mechanical

CHAP. LVII.

Prospects

means, they are apt to remain permanent throughout life, a remark which especially applies to groin rupture; and they are sure ever afterwards to be a source of continual annoyance, and sometimes probably of actual danger.

Treatment. 1. Navel rupture.

Properly arranged pad.

The domestic management of navel rupture is simple. A pad made of a flat piece of thick gutta-percha or solah, covered with two or three folds of linen, should be secured to the centre of an elastic binder, and should be continually worn night and day around the belly: this is all that is required. A convex pad should never be used, because, although it pushes the bowel back more effectually, it at the same time pushes into and enlarges the opening, instead of helping to close it. After a few months recovery will probably be complete, the aperture having closed up.

2. Groin rupture not so easily managed.

Surgeon's opinion to be obtained.

A groin rupture is not so simply managed. Here there is no need for great hurry, and therefore, even if there be a delay of a few weeks, it is better to wait for the opinion of a surgeon, because there are one or two easily-cured affections of the parts involved which closely resemble rupture—so closely that the mother cannot discriminate. A long delay should never be permitted, because it is only during infancy that cure without operation is possible. If the case is pronounced to be rupture, the instrument maker will, upon the precise measurements, &c., being supplied to him, furnish a proper truss, an apparatus which is essential to efficient treatment; or, a surgeon may cure the case permanently by operation.

Curable during infancy without operation.

## CHAPTER LVIII.

### ACCIDENTAL POISONING.



Classification.

Poisons are of three kinds :—

1. Corrosives, which have a local burning action.
2. Irritants { metallic / vegetable / animal } cause local inflammation.
3. Neurotics act chiefly on the nervous system.

Examples.

Examples of *corrosives* are : corrosive sublimate, the mineral acids, ammonia, lunar caustic, and chloride of zinc ; of the *irritants :* arsenic, antimony (metallic), croton oil (vegetable), and cantharides (animal) ; of the *neurotics:* opium, chloral, strychnine, aconite, carbolic acid, and numerous others.

Symptoms.

The symptoms of the *corrosives* are : burning pain of the mouth, gullet, and stomach, extending soon over the whole belly ; mouth bleached inside ; vomiting, it may be of bloody mucus ; the abdomen swells, and collapse comes on. Of the *irritants :* after an interval, a burning constriction of the mouth, gullet, and stomach, which latter is tender to pressure ; nausea, thirst, and vomiting follow, generally accompanied by purging and fever ; the pulse fails, and the body becomes cold and clammy. Of the *neurotics:* some produce deep sleep (opium, chloral, camphor), some noisy delirium (belladonna, camphor), others cause convulsions and cramps (strychnine, nux vomica, arsenic), and so on.

CHAP. LVIII.

General remarks on treatment.

In most cases the object is to EMPTY THE STOMACH quickly and thoroughly. The parent is confined to emetics for this purpose, though the stomach-pump is the most effectual of all by not only emptying but repeatedly washing out the organ. In most cases of corrosive poisoning, the use of the stomach-pump is not permissible *in any hands*, because the gullet and stomach are so softened and eroded that they might be perforated. Even of emetics, the amateur is precluded the employment of that one (apomorphine) which is the most certain, because it must be used hypodermically and in very minute doses to be safe. A dose by the mouth which would act, would be dangerously depressing. In the same way he is precluded the use of strychnine and other powerful remedies. These disabilities all point to the necessity for the speedy attendance of a medical man, but much may be done meanwhile. The best substitutes will be suggested where there are these difficulties.

Emetics.

*Mustard* (a heaped tea- or dessert-spoonful) in tepid water, given repeatedly, is a good and quick emetic. The sulphate of *zinc* (5 to 15 grains), or sulphate of *copper* (41) dissolved in water is also most useful and reliable. *Ipecacuanha* is too slow, but may be used when others are not available.

Antidotes.

ANTIDOTES are remedies which unite with poisons to form harmless substances. Examples: arsenic with dialysed iron or magnesia; the mineral acids with chalk or lime; tartar-emetic with tannin or tannin-containing substances, as catechu, bark, etc.; corrosive sublimate with white of egg or milk. Epsom salts in solution is an antidote to carbolic acid poisoning, and oil is subsequently given to relieve the pain. But

many of the *vegetable poisons* cannot be dealt with in this direct way. We get rid of them as far as possible by rapid emetics, and then we give medicines which have effects antagonistic to the poison. Examples: for strychnine poisoning we use chloral after emetics, for belladonna cases we give opium after emetics, and for opium poisoning we use belladonna after emetics; for aconite poisoning, after emetics we give digitalis and stimulants to keep the heart and respiration going, and so on. Strong tea and coffee precipitate the active principle (alkaloids) of many vegetable poisons.

General advice.

When alcohol is recommended, take care not to induce intoxication.

An emetic promptly given is always admissible.

When writing for the doctor, state the case as fully as you can, to enable him to bring the proper remedies and appliances.

"Never regard a case as hopeless. In every case, if you see the patient at once, and have the requisite appliances at hand, there is a good chance of recovery." *

"Do not relax your endeavours because at first your efforts appear unavailing. You may have to work for three or four hours before there is much improvement." *

"Do not leave your patient alone, even when he has apparently quite recovered. Often enough, as the circulation improves the symptoms reappear, probably from re-absorption of the poison." *

* "What to do in Cases of Poisoning," by Dr. W. Murrell. A little book which is a model of brevity and mastery of the subject.

# SOME SPECIAL POISONS,

## ARRANGED ALPHABETICALLY, WITH THEIR SYMPTOMS AND TREATMENT.

| Name and how taken. | Symptoms. | Treatment. | Remarks. |
|---|---|---|---|
| ACIDS, MINERAL. (Sulphuric or vitriol, nitric, and muriatic or hydrochloric.)<br><br>By mistake for something else. | Violent burning pain in mouth, gullet, and stomach. Vomiting of shreddy membrane and blackened blood. Thirst. Constipation. Loss of voice. Difficult breathing. Mouth and throat white or yellow coloured. Collapse. | Chalk, soda (washing soda if no other), carbonate of potash or magnesia—diluted and given freely. Wall-plaster and water. Soap and water.<br>Seize the nearest remedy.<br>Half a dose of laudanum.<br>All food by bowel.<br>Drinks of olive oil, white of egg, barley-water, or arrow-root. | These are "corrosives," but if taken diluted they are only "irritants." Then not nearly so dangerous.<br>Any alkali is an antidote.<br>May be immediately dangerous by causing swelling of the throat and suffocation. |
| ACONITE, or MONKSHOOD.<br><br>Liniment in error. "Pain-killer."<br>Root mistaken for horse-radish. | In three minutes a tingling, numbing pain of mouth, lips and tongue. Numbness of the skin. Often retching. Paralysis first of the legs, then of the arms. Failing pulse and respiration. Collapse. Mind clear throughout. | Mustard (or zinc) emetic.<br>Alcohol and sal volatile.<br>Mustard plaster over heart.<br>Tincture digitalis. (Dose, 5 minims each ½ hour, thrice, for child of five) in water.<br>Recumbent position and absolute rest.<br>Friction to the limbs.<br>Artificial respiration (p. 35). | Real horse-radish is white, has a pungent odour when scraped, and the scraped surface remains white. Aconite root is brown, has no odour, and the scraped surface soon becomes pink.<br>N.B.—Aconite is often *combined with belladonna* in liniments. Treatment then as above. |

| Name and how taken. | Symptoms. | Treatment. | Remarks. |
|---|---|---|---|
| AMMONIA.<br><br>Liniment in error. "Liquid ammonia." "Compound camphor liniment." | Burning of mouth, throat, chest and stomach. Mouth bleached inside. Cough. Bloody saliva escaping. Voice lost. Pulse failing. Cold limbs. Danger of suffocation. | Vinegar largely diluted, freely.<br>Followed by draughts of olive oil, melted butter, white of egg with water or barley-water.<br>Half an ordinary dose of laudanum.<br>Tracheotomy sometimes necessary. | Vinegar (it may be "toilet") is the antidote. |
| ANTIMONY.<br><br>Tartar emetic, pure or ointment.<br>Antimonial wine mistaken for sherry. | Incessant vomiting, faintness, and clammy perspiration. Burning of throat and stomach. Violent purging. The vomit and stools may be bloody. Cramps and collapse. | Emetic of mustard or zinc if vomiting deficient, followed by draughts of water.<br>Tannic acid, 10 to 15 grains in water, repeated if vomited (tincture of bark, catechu, or even strong tea), followed by white of egg and barley-water.<br>Half a dose of laudanum *when recovering*.<br>Enema of peptonised milk and raw beef with brandy. | Four or five grains of the ointment, or half an ounce of the wine would be dangerous to a child.<br>Tannin (or anything containing it) is the antidote. |

| Name and how taken. | Symptoms. | Treatment. | Remarks. |
|---|---|---|---|
| ARSENIC.<br><br>Fowler's Solution.<br>"Rough on Rats."<br>Fly-papers.<br>Arsenical soap.<br>White arsenic used by builders. | In ½ hour, faintness, nausea and burning of stomach. Vomiting which may be tinged with blood. Cramps in legs. Great thirst. Belly tender. Straining and bloody purging. Clammy skin. Collapse. | Emetic (mustard or zinc) followed by large draughts of water.<br>Dialysed iron (a dessertspoonful or more) well diluted and repeated; or, in its absence, carbonate of magnesia, or olive oil freely.<br>Barley-water and white of egg with water.<br>Large dose of castor oil.<br>Hot blankets and bottles.<br>Frictions. | Less than a grain might be fatal.<br>Fowler's solution contains 1 grain in 100 drops.<br>If *no dialysed iron at hand*, mix carbonate of soda with tincture of steel, and filter through a handkerchief. Of the moist remainder give freely to the patient. |
| BELLADONNA, or ATROPINE.<br><br>Eye drops in error.<br>Liniments.<br>Extract of belladonna.<br>Berries of the plant. | Dryness and heat of throat, flushed face, great thirst, widely dilated pupils, mirthful delirium, staggering gait, deep sleep. | Emetic (mustard or zinc).<br>Brandy, sal volatile, chloric ether.<br>Half a dose of laudanum.<br>Tannin, freely.<br>Strong tea or coffee (mouth or enema).<br>Artificial respiration. | Known as "deadly night-shade."<br>Children bear large doses well.<br>When *belladonna and opium combined* in a liniment are taken, treat as for opium (which see). |

| Name and how taken. | Symptoms. | Treatment. | Remarks. |
|---|---|---|---|
| CAMPHOR.<br><br>Eaten from lump for colds.<br>Essence or spirit of camphor. | Odour of breath, giddiness, faintness, delirium, cold, clammy skin. Difficult breathing. Deep sleep.<br>"No pain, no purging, no vomiting" (Murrell). | Emetic (mustard or zinc), followed by draughts of water and brisk purgative. Sal volatile and chloric ether at intervals. Warm blankets and hot bottles. Cold and hot douches to head and chest. | Alcohol not to be given by the mouth if solid camphor has been taken, because it would dissolve it.<br>May give brandy by enema if necessary. |
| BURNETTS' FLUID. | | *See* Zinc. | |
| CARBOLIC ACID.<br><br>Lotions in error.<br>Dressings and oil by absorption.<br>Injections for worms. | Burning of mouth.<br>Inside of mouth white and shrivelled. Odour from breath. Cold, clammy skin Lips and eye-lids livid. Urine inky-coloured. Pupils contracted, deep insensibility. | A couple or three teaspoonfuls of Epsom salts in tumbler of water.<br>Then emetic of mustard or zinc.<br>More Epsom salts at intervals.<br>Follow by olive oil and castor oil mixed, and white of egg in water, freely.<br>Stimulate with brandy, sal volatile and chloric ether. | Whitta recommends washing out the stomach with pure glycerine, using a soft tube, but this could only be done by a skilled person. |

| Name and how taken. | Symptoms. | Treatment. | Remarks. |
|---|---|---|---|
| CAUSTIC, LUNAR. | | *See* Silver. | |
| CHARCOAL FUMES (Carbonic Acid Gas).<br><br>Charcoal fires in closed apartments. | At first headache, giddiness and drowsiness, succeeded by insensibility, with a livid face. | Removal into fresh air.<br>Ammonia at short intervals to nostrils.<br>Stimulants by mouth or bowel.<br>Electricity.<br>Artificial respiration. | Common among the natives of India. |
| CHLORAL.<br><br>Sedative syrup.<br>Patent medicines. | At first a natural sleep, which deepens into coma. Livid face. Failing pulse. Low temperature (Murrell says it may fall to 91°). Pupils contracted at first, afterwards dilated. | Emetic of mustard or zinc.<br>Sal volatile, alcohol and ether as stimulants.<br>Hot bottles and blankets applied.<br>Strong hot coffee as enema.<br>Rouse patient by talking and shaking.<br>Electricity.<br>Artificial respiration. | A few grains might prove dangerous to a very young child. |

| Name and how taken. | Symptoms. | Treatment. | Remarks. |
|---|---|---|---|
| COPPER.<br><br>Sulphate of copper (blue stone) lotion.<br>Copper cooking utensils (verdigris). | Metallic taste, constriction of the throat, vomiting, griping and straining, purging, jaundice. Difficult breathing, great thirst, insensibility, and perhaps convulsions. | White of egg and milk, freely.<br>Emetic of mustard or Ipecacuanha if vomiting deficient.<br>Mucilaginous drinks.<br>A single dose of laudanum.<br>Poultice abdomen. | The proper "tinning" of cooking utensils is important. Acids should not be cooked in copper vessels.<br>This is not a likely cause of acute poisoning. A sufficient dose acts as an emetic. |
| CORROSIVE SUBLIMATE.<br><br>Lotion in mistake, or ointment. | Metallic taste and feeling of constriction in the throat.<br>Pain in stomach. Vomiting of bloody mucus. Bloody purging. Pulse very weak and rapid. Skin cold and clammy. Urine suppressed. Convulsions. | Emetic of mustard or zinc.<br>White of egg with water, copiously.<br>Failing eggs, use flour and water, or milk and lime-water.<br>Stimulants as required. | The lotion has the appearance of water, and very little taste. |
| CROTON OIL.<br><br>Mistaken for castor oil.<br>Liniment swallowed. | Severe pain in stomach. Copious watery purging. Vomiting. Face pale. Faintness. Cold skin. | Emetic of mustard or zinc.<br>Drink freely of barley-water or white of egg and water, or arrowroot.<br>Stimulants (brandy, sal volatile and chloric ether).<br>A half dose of laudanum.<br>Linseed poultice to stomach. | |

| Name. | Symptoms. | Treatment. | Remarks. |
|---|---|---|---|
| DALBY'S CARMINATIVE. | | Treat as for Opium (which see). | Given innocently. |
| FLY-PAPER. | | *See* Arsenic. | Chewing the paper, or drinking the water in which it lies. |
| FOWLER'S SOLUTION. | | *See* Arsenic. | Mistake for something else. |
| GIBSON'S VERMIN-KILLER. | | *See* Strychnine. | Mistake, or curiosity. |
| GODFREY'S CORDIAL. | | *See* Opium. | Given innocently. |
| HYOSCYAMUS (Henbane). | | Treat as for belladonna. | Overdose. |

| Name and how taken. | Symptoms. | Treatment. | Remarks. |
|---|---|---|---|
| IODINE.<br><br>Tincture or liniment. | Pain and burning in the throat and stomach. Vomiting and purging. Faintness; possibly convulsions. | Starch (arrowroot, or any flour) in water freely (given raw).<br>Emetic of mustard or zinc.<br>Repeat the starch.<br>A small dose of opium if much pain. | Not often fatal.<br>The vomited starch-water will be blue. |
| LEAD.<br><br>Sugar of lead is sweet.<br>Goulard's extract.<br>White lead mistaken for chalk.<br>Lotions swallowed. | Metallic taste. Great thirst. Severe colic relieved by pressure. Constipation. Cramps. Cold sweats, and convulsions. | Emetic (mustard, zinc or Ipecacuanha), zinc the best because it is an antidote too. Dilute sulphuric acid 10 to 15 minims in glass of water repeatedly; or Epsom salts in water freely. Milk and white of egg to follow. Poultice belly. Half dose of opium. Afterwards iodide of potassium in mixture. | Not at all so poisonous as is generally supposed. |
| LUCIFER MATCHES. | | *See* Phosphorus. | The heads may be eaten in silly play. |
| MORPHIA. | | *See* Opium. | |

| Name and how taken. | Symptoms. | Treatment. | Remarks. |
|---|---|---|---|
| MUSHROOMS. | In ½ hour or more colic, followed by vomiting and diarrhœa. Pulse becomes very weak. Mental excitement. Insensibility. | Emetic of mustard, zinc or ipecacuanha.<br>Tincture belladonna (5 drops every ½ hour for 3 doses to a child of five).<br>Castor oil.<br>Stimulants (brandy, sal volatile or ether). Warmth to surface. Poultice belly. | |
| NITRIC ACID. | | *See* Acids, Mineral. | |
| NUX VOMICA. | | *See* Strychnine. | |
| OPIUM.<br><br>Solid lump.<br>Laudanum.<br>Soothing syrups.<br>Batley's solution.<br>Enema. Poultices or liniments by absorption.<br>Dover's powder.<br>Compound Kino powder. | Pupils contracted. Face livid. Skin dry.<br>Insensibility, which becomes very deep with heavy breathing. This is succeeded by great prostration, shallow breathing, and general clammy perspiration. | Emetic of mustard or zinc.<br>Strong coffee or tea liberally.<br>Keep patient walking about.<br>Rouse him by shaking and slapping.<br>Pour cold water over the head at intervals.<br>Tincture of belladonna (5 drops to a child of five, every ½ hour for three doses).<br>Artificial respiration. | Often *combined with belladonna* in a liniment, then treat as for opium, but do not administer belladonna.<br>Infants are very easily affected by opium. Two drops of laudanum, and one grain of Dover's powder have caused death. |

| Name and how taken. | Symptoms. | Treatment. | Remarks. |
|---|---|---|---|
| OXALIC ACID.<br><br>Mistaken for Epsom Salts.<br>"Salt of sorrel" for removing iron-mould. | Burning pain in throat and stomach, vomiting of bloody matter, imperceptible pulse, and great depression. Mouth may be white inside. | Chalk, whiting, or lime freely with water. The saccharated solution of lime in half teaspoonful doses frequently in water is the best. Castor oil and olive oil afterwards. | Very poisonous. Must *not* give the alkalies (potash and soda) as they form poisonous compounds with the acid. The purely acid taste might attract a child. |
| PAIN KILLER. | | *See* Aconite. | |
| PHOSPHORUS.<br><br>Rat-paste poison.<br>Match-heads. | Burning pain in the stomach. Vomiting, which may contain blood. Delirium. Deep insensibility or convulsions.<br>The patient may recover the local symptoms, the graver symptoms not appearing for a couple of days. | Emetic—copper the best, as it is also an antidote.<br>Repeat it.<br>Turpentine purgative (½ drachm with mucilage), followed by Epsom salts (54). | All oily and greasy substances to be avoided when treating a case. |
| RAT PASTE POISON. | | *See* Phosphorus. | |
| ROUGH ON RATS. | | *See* Arsenic. | |

| Name and how taken. | Symptoms. | Treatment. | Remarks. |
|---|---|---|---|
| SALT OF SORREL. | | *See* Oxalic Acid. | |
| SIMPSON'S RAT-PASTE. | | *See* Strychnine. | |
| SILVER, NITRATE OF, (LUNAR CAUSTIC).<br><br>Portion falling down throat during an application. | Vomiting of white, flaky matter, which turns black on exposure. | Common salt in water or milk, repeatedly, in large quantities.<br>Emetic after first draught.<br>White of egg with water freely afterwards. | A small quantity taken is rendered harmless by the gastric juice. The antidote, salt, acts in a similar way. |
| STRYCHNINE.<br><br>Mistaken for santonin or salacin.<br>Some rat poisons (Simpson's paste, Butler's vermin killer). | Convulsions and lockjaw; body bent backwards. Countenance wildly excited. Pulse rapid and small. Respiration difficult. | Emetic of mustard or zinc.<br>Tannic acid in water, given copiously.<br>Bromide and chloral (8 *b*) by bowel, and repeated to keep the convulsions in abeyance.<br>Artificial respiration. | The active principle of nux vomica.<br>One-sixteenth of a grain has killed a child of two. Twenty grains of a nux vomica nut would be dangerous. |
| SULPHURIC ACID. | | *See* Acids, mineral. | |
| TARTAR EMETIC. | | *See* Antimony. | |

| Name and how taken. | Symptoms. | Treatment. | Remarks. |
|---|---|---|---|
| TOBACCO (including Lobelia). | Nausea, vomiting and faintness. Confusion of sight. Clammy skin and weak pulse. | Emetic of mustard.<br>Tannic acid, 10 grains or so in water frequently, or strong tea. Stimulants—brandy, sal volatile, and chloric ether.<br>Warmth to surface of body.<br>Recumbent position. | |
| VERMIN KILLERS. | | | |
| Battle's. | | *See* Strychnine. | |
| Butler's. | | " " | |
| Gibson's. | | " " | |
| Simpson's. | | *See* Arsenic. | |
| Roth and Ringeisen's. | | *See* Phosphorus and Arsenic. | |
| Rough on Rats. | | *See* Arsenic. | |
| ZINC CHLORIDE. | Corrosion of lips and mouth. Pain and burning of stomach. Constant vomiting of bloody fluid. Difficulty of swallowing and breathing. Quick, feeble pulse, deep insensibility. | Carbonate of soda in large quantities dissolved in warm water (common washing soda will do). Milk and white of egg very freely. Tannic acid or strong tea. A dose of laudanum.<br>Linseed poultice to stomach. | |
| Burnett's fluid. | | | |
| Disinfecting fluid. | | | |

# PART IV.

## On the Administration and Application of Remedies to Children.

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## CHAPTER LIX.

### ADMINISTRATION OF REMEDIES.

CHAP. LIX.

Medicines may usually be supplanted by dietetic and other means.

IT has often been said, and with great truth, that the less medicine children take the better. A carefully regulated diet, together with attention to the other details of general hygiene, are the surest means of attaining this desirable end. As a matter of fact, drugs are very seldom necessary, in any form, throughout childhood, if the general management be good.

In childhood, drugs specially powerful.

But drugs and proper medical treatment are especially powerful for good in the sicknesses of childhood. Very many of the diseases of early life may be arrested by the simplest means, if taken in time.

Patent medicines.

*Patent* or other medicines of unknown composition should never, under any circumstances, be given to a child. Only drugs which may be administered with absolute safety should be thought of.

Medicine small in bulk.

Whatever medicine is considered necessary should be made to occupy the smallest possible bulk, and

pains should be bestowed upon making it as little objectionable in taste as is compatible with its nature.

Opiates. Danger of.

*Opiates* are especially dangerous in the case of infants; so much so that the amateur should never, under any circumstances, give even the most minute dose of any opiate in any form to an infant under six months of age, and after that age *only* as directed in the foregoing pages, where it will be observed that on every occasion upon which opium is recommended, a special caution as to the exact dose and mode of administration is inserted. Godfrey's Cordial or Dalby's Carminative should never be permitted within a nursery. They, and other preparations of the same class, contain opium.*

Patent "soothing" medicines.

Mercury.

*Mercury* is only recommended in one form and for one purpose, namely, calomel, in a moderately purgative dose. No other preparation of mercury for this or any other purpose should ever be used by non-professional persons. Grey powder, which is, or was, such a favourite in the nursery in England, is especially to be avoided in India, because under the influence of climate it becomes changed in its nature into an actively poisonous

* "Godfrey's Cordial is made of infusion of sassafras, treacle, and tincture of opium. It contains about one drachm of the latter in six ounces, or half a grain of opium in an ounce. Half a teaspoonful has been known to cause the death of an infant. Dalby's Carminative is composed of essential oils, aromatic tinctures, carbonate of magnesia, and tincture of opium. It contains one-eighth of a grain of opium in every ounce. Forty drops have been known to kill an infant. Half a teaspoonful of Paregoric Elixir has been fatal to an infant."—SWAIN'S *Surgical Emergencies*. "It is said on good authority that 15,000 children are killed every year by soothing-syrups and other similar preparations" (Murrell).

CHAP. LIX.

substance. Powders containing calomel and soda should be made up freshly as required. By long keeping some of the calomel is changed into corrosive sublimate.

A few words concerning the remedies advised in these pages may be here inserted with advantage:—

Alteratives.

"ALTERATIVES are medicines which promote secretion and exhalation generally, soften and loosen textures,

Action of.

check inflammation, lessen inflammatory effusions, and promote re-absorption" (Tanner). In fact, they are remedies which change diseased action by acting on the blood. Only three alterative prescriptions have been entered among the prescriptions, and concerning them there is no need for further instructions than those

Caution as regards arsenic.

entered under each. Of course the dose of any medicine containing arsenic must be carefully regulated, and care taken that it be administered immediately after food; but it is so valuable a drug, and in the shape of Fowler's solution it is so manageable that it would not be right to exclude it. It may be employed with perfect safety by following the prescriptions (3). Half a minim to one minim thrice daily in water is a proper and quite safe dose for a child of one year.

Applications.

A number of APPLICATIONS are mentioned, the mode of employment of each being explained in the text. There are, however, a few others, which perhaps need some comment. *Poultices*, for instance, are frequently employed. By softening the skin they relieve tension and pain. In the early stages on an inflammation they favour resolution by maintaining the temperature and promoting active circulation through the part. Before any poultice is applied, the skin should be oiled to

Mustard poultices.

prevent sticking. A pure mustard poultice should

never be applied to a young child; it is too strong, and is likely to blister, and therefore should be diluted with twice or three times its quantity of flour or linseed. The effect of this remedy in relieving abdominal and chest pain is extraordinary, and can hardly be accounted for by the fact that the temporary congestion of the skin draws away blood from the neighbouring affected part. About a quarter of an hour is a sufficient time for a diluted mustard poultice to remain on. A linseed poultice prepared with $\frac{1}{6}$ to $\frac{1}{8}$ of its quantity of mustard may be retained for some hours.

Ordinary poultices.

The linseed or other simple poultice may be applied to the surface after the removal of the mustard poultice, to perpetuate its action, or it may be employed alone. A linseed poultice retains its warmth longer than a bread poultice (see also p. 280).

Blisters and leeches.

Neither blisters nor leeches should ever be applied to a child except under direct medical advice.

Violet powder.

Violet powder or a dusting powder of some kind is necessary as an application to the child's skin, particularly in India. The common corn-flour makes an excellent dusting powder, but a combination of oxide of zinc and powdered starch is the most useful of all (11). Ordinary violet powder obtained from a respectable chemist answers all purposes admirably, but it is not a good plan to purchase the article from the box-walla, for it has been proved that adulteration in its worst form has of late included violet powder. Professor Foster discovered no less than $4\frac{1}{2}$ grains of arsenic in 100 of some powder purchased from "a respectable chemist in the north of London" (*Lancet*,

Caution as to.

CHAP. LIX.

May, 1878), and shortly before that a wholesale poisoning through skin absorption occurred in London.

Fomentations.

Hot-water fomentations are very useful in many cases. The water should be as hot as the patient can bear it. Two thickly folded and large flannels should be used, one being removed from the hot water and wrung out should be applied to the part; after an interval of two or three minutes the second should be similarly applied upon the removal of the first, and the process continued for half an hour if possible.

Turpentine stupes.

Turpentine stupes may be applied by sprinkling a little turpentine upon the flannels when they are wrung out of the hot water, before application, as above.

Cold and Unctions.

Of the application of cold to the surface of the body enough has already been said (pp. 173 and 177); oily frictions to the skin have also been alluded to at page 178.

Carbolic applications.

Applications containing carbolic acid are to be used cautiously with children, who are very susceptible to its influence; it may be absorbed rapidly into the system. The first sign of such absorption is an inky tint of the urine. In such an event the use of the acid should be at once suspended and boracic acid substituted. If more be used its poisonous effects will be set up.

Throat applications.

In making applications to the throat, a large soft camel's-hair brush, securely fixed to its handle, should be used, and it should be pushed well down the throat, while the head is thrown well back, deliberately and cautiously, with a rotatory motion, so as to distribute the application over all the parts.

Vapour bath.

The vapour bath is valuable in cases of dropsy. The

child, quite naked, should be seated upon a cane-bottomed chair; a blanket, reaching to the ground on all sides, should then be thrown around the patient, and tied at the neck, so as to leave no aperture. A "*chattie*," or other open vessel of boiling water having been placed under the chair, sweating soon commences, and it should be kept up for a quarter of an hour at least. The child should then be rapidly and thoroughly dried, and put into a warm bed. Another plan is to conduct steam beneath the bed-clothes, which have been raised from the body by arching a couple of bamboo twigs across the bed underneath them, through a hollow bamboo or india-rubber tube from the spout of a kettle; but care must be taken not to allow the jet of steam to impinge directly upon any part of the body.

Hot and warm bath.

A hot bath usually has a temperature of about 104° to 108°, and the warm bath a temperature of 98° or 100°. To be of use, the water should be deep enough to reach to the child's arm-pits. It is not of any consequence whether drying be effected completely, but it is important that it be done rapidly. The child should be wrapped in a blanket and put to bed, whether with or without his night-dress matters not, but a garment should be warmed previously to being put on. Irritation and pain are thus subdued, and probably perspiration induced.

Mustard bath.

A mustard bath is used in certain cases of threatened collapse. It is prepared by using mustard in the proportion of one ounce to each gallon of warm water. To ensure equal diffusion, the mustard should first be made into a paste, and placed in a muslin

CHAP. LIX.

bag, through which it should be squeezed into the water.

Anthelmintics.

ANTHELMINTICS are medicines which have been proved to possess the power of destroying the life of intestinal worms; or so weakening and intoxicating them as to render them powerless. That remedy which is poison to one kind is harmless to another, hence the absurdity of the so-called worm tablets, lozenges, &c.

Anti-spasmodics and sedatives.

ANTISPASMODICS *and* SEDATIVES are most important medicines. Of this class the bromide of potassium is an effectual and at the same time perfectly safe medicine for the parent to handle. With it harm can hardly be done, unless there be utter recklessness and disregard of the effects it produces. Strictly speaking, it ranks more as a sedative, a guardian against spasm, rather than a means of relieving it on the moment. While taking the bromide, an infant should be kept under observation, because its continued use sometimes produces a skin eruption. In most cases this amounts only to the appearance of red blotches, which soon vanish upon the cessation of the medicine, but on rare occasions the points of local inflammation are so great as to produce a sort of wart-like growths which disappear slowly, and may cause a good deal of suffering.

Bromide of potassium.

Chloral.

Chloral is a most powerful sedative, but it is one which must be used with caution; the dose advised in prescription No. 8 is perfectly safe, and it is one which may be repeated after six or eight hours if there is necessity. When given in combination with bromide of potassium it acts more powerfully.

Sulphonal.

Sulphonal is a most valuable hypnotic, producing lengthened and refreshing sleep. "Its advantages are that it is taste-

less and does not derange the digestion, nor seriously depress the circulation or respiration." It is best given in hot soup or water. It does not dissolve in cold water, but if dissolved in boiling water it will not fall down again on cooling to a point at which it can be drunk. It has the disadvantage that it is not always certain to produce the desired result, or it may be long in doing so. One efficient dose in 24 hours will suffice. The dose for a child of five would be about eight grains; and for a child aged two about half that quantity.

Ether.

Ether is a pure antispasmodic; the sulphuric ether (called also "spirits of ether") in doses of 3 to 6 drops to a child; the spirits of chloroform (also called "chloric ether") is another preparation of ether, of great value and power as a stimulant antispasmodic: it may be given in doses of 1 to 2 drops to a child a year old.

The ordinary sweet spirits of nitre is another and excellent antispasmodic when given in doses of five to ten minims. It also acts as a sweat-producer and urine-increaser, as will be presently shown.

Carminatives.

CARMINATIVES rouse the nerves of the stomach and relax its orifices, allowing eructations of gas to escape, and relieving spasm. They are therefore very useful for flatulence, and when combined with aromatics and soda they are of great value, both in colic and certain kinds of diarrhœa. Some formulæ have been inserted to enable the parent to make suitable carminative fluids from bazaar sources; but the distilled waters (if really made by distillation) as obtainable from the chemist are always to be preferred.

Value of.

Bazaar carminatives.

CHAP. LIX.

Astringents. Much abused.

ASTRINGENTS constitute one of the best known and most abused of all classes of remedies. They vary much in their mode of action, and consequently the kind of case for which it is proposed to employ an astringent must always be carefully discriminated before its administration; for instance, chalk acts mechanically by coating the delicate mucous membrane, and thus protects it, and it is also an antacid; therefore when the irritant is removed, chalk acts beneficially. Sugar of lead, on the other hand, is a pure and direct astringent, contracting the smaller vessels and tissues, and preventing them pouring out fluid; hence it is used in violent watery discharges from the bowels, and to check bleeding. The mineral acids, lead, oxide of zinc, tannin, and catechu are intestinal astringents. Opium, catechu, and tannic acid affect the stomach; while digitalis, ergot, and cold influence the blood-vessels.

Bael.

Bael fruit is classed among the astringents, but it is almost more an alterative, its astringent powers being but slight. "In irregularity of the bowels, presenting alternations of diarrhœa and constipation, one draught (see prescript. No. 33) taken early in the morning often exercises a most beneficial effect in regulating the bowels," says Waring, who issues the following caution:—

Spurious articles sold.

"In bazaar specimens, the wood-apple (fruit of the *Feronia elephantum*) is often substituted for Bael. Though they bear a close resemblance externally, they can easily be distinguished by opening them. In the true bael there are in the centre of the pulp a number of cells, from five to eighteen each, containing one or more seeds and glutinous mucus, whilst in the wood-apple there are no cells, and the seeds are imbedded in the pulp."

When the fresh fruit is not procurable, the liquid Extract of Bael or the Dietetic Bael can be obtained from the chemist.

Ice and freezing mixture.

Ice is useful as a local astringent. It should be tied in a bladder, and so applied. In its absence the freezing mixture may be substituted with nearly equal results (35).

Diaphoretics.

Diaphoretics create perspiration. It is seldom that a very young child perspires freely under any treatment, or during any sickness. There is moisture, but not perspiration. By promoting the skin action, internal congestions are obviated, and the circulation thereby relieved. The warm bath used in conjunction with this class of medicine much helps their action.

Infant seldom perspires freely.

Action of.

Assisted by warm bath.

Sweet spirits of nitre.

The most common, and perhaps the most useful diaphoretic, is the sweet spirits of nitre, in doses of from five to ten drops every few hours to a child a year old, and twice that quantity to a child who is above two years. It should never be given undiluted, and usually it is combined with other medicines, which experience has proved to assist in producing the desired end. The amount of urine secreted is also considerably increased by the use of the sweet spirits of nitre (otherwise called "spirits of nitrous ether").

Nitre.

Common saltpetre or nitre, or nitrate of potash, is a valuable diaphoretic, and it has the advantage of being obtainable in the bazaars, under the name of shórá. To be fit for internal use it should be pure, in large white colourless masses, and possess a saline cooling taste.

How to purify it.

If impure, "to fit it for internal use, it should be purified by dissolving it in boiling water, removing the scum after the liquid

CHAP. LIX.

has been allowed to settle, straining the solution through calico, and setting aside to crystallise" (Waring).

Mindererus' spirit.

The solution of acetate of ammonia is the old and well-known "spirits of mindererus," a bland and mildly efficient diaphoretic, which may be given in doses of from twenty to sixty drops, but it is never prescribed alone.

Antifebrin.

Among this class we have included *antifebrin*, a very important and highly useful drug. Dr. Mitchell Bruce says of it that it is "powerful, safe, and convenient," but it has the disadvantage that it will not dissolve in water, though it is soluble in wine. For further information about it refer to pages 175 and 199. Valuable as this drug is in individual cases, a routine treatment of fever by its aid is much to be deprecated, and cannot be compared for efficiency and innocency with the employment of the cold bath for the same purpose.

Emetics.

EMETICS are medicines which are used to produce

Uses.

vomiting. They are given when we wish to empty the stomach of its contents, to depress the patient temporarily, and to augment secretion and excretion.

When precluded.

Emetics are precluded when there is great debility.

Cause little distress in children.

This class of medicines is especially useful in the diseases of children, because so much less distress results from their employment than in the case of the adult.

How to administer.

Unless there is urgency, and that immediate vomiting is desired, an emetic should not be given in too large a dose at first. To obtain the full effect it is best to repeat the dose every ten or fifteen minutes till vomiting is induced, and it is also desirable to administer it before

the usual hour of rest, because the sleep and perspiration which follow the action of the medicine are thus perpetuated; but, of course, it is not always that there is choice in this matter.

Value of.

At the beginning of croup, when convulsions are threatened, and in commencing inflammations of the lungs, emetics are invaluable; so in bronchitis and obstruction of the throat with mucus in croup and whooping-cough, &c.

The most common.

The most common emetics are ipecacuanha, mustard, alum, sulphate of zinc, and sulphate of copper.

Ipecacuanha.

Ipecacuanha is an universal medicine. In the case of infants it is best to employ the powder, but for older children the wine is more convenient: a grain of the former, or a teaspoonful of the latter, given every quarter of an hour till vomiting results, is the usual and best means of employing the drug. Ipecacuanha also assists expectoration, besides acting on the skin.

Mustard.

Mustard is a good stimulating emetic; it neither causes depression at the time, nor leaves any behind; for this reason it is best suited to cases where the object is merely to evacuate the contents of the stomach, as in cases of poisoning, &c., and it is unsuitable to cases where we desire the physiological effects of emetics, viz., increased secretion, subjection of the pulse and nervous system, subjugation of fever and the induction of depression. The bulk of the dose (a teaspoonful in half a tumblerful of luke-warm water) is a great objection to its employment for children—in fact, it is only adapted for elder children.

CHAP. LIX.

Alum. In the absence of ipecacuanha, alum (phitkari of the bazaar) may be used as an emetic (*see* formula No. 39) of the non-prostrating class.

Zinc. Sulphate of zinc in doses of a couple or three grains dissolved in water may be given to a young child: double this quantity being required for children over three or four years of age, and it should be repeated every ten minutes while necessary. It is quick in its action, and does not occasion depression.

Copper. Sulphate of copper (41) is a powerful emetic, which is sometimes necessary in urgent cases, where milder drugs refuse to act or are not likely to act, and where it is desired to avoid depression. It is not in any way dangerous, and it suits children very well.

Country ipecacuanha. Country ipecacuanha (anta-mul) is a good substitute for the imported article, though not so thoroughly to be relied upon. Waring speaks highly of it.

Caution as to ipecacuanha. There is no medicine that deteriorates more certainly than ipecacuanha under exposure. A fresh supply should be obtained every year.

Mudar. Mudar is a native drug which has been entered under the head of emetics, though it is seldom or never employed for that purpose. For dysentery it is held in deservedly high repute.

Directions for collection of. "The only part employed in medicine is the root-bark, and it is necessary carefully to attend to the subjoined directions for collecting and preparing it for medical use, a disregard of them having been, in some instances, the apparent cause of the failure of the remedy. The roots should be collected in the months of April and May, from sandy soils, and all particles of sand and dirt having been carefully removed by washing, they should be dried in the open air, without exposure to the sun, until the milky juice contained in them becomes so far dried that it ceases to flow on incisions being made. The bark is then

to be carefully removed, dried, reduced to powd r, and preserved in well-corked bottles" (Waring). CHAP. LIX.

ENEMATA have been recommended in four different forms in the foregoing pages, viz., purgative, sedative, astringent, and nutritive. Whatever kind of enema be employed, it is important that no force whatever be used in the introduction of the tube, which should be thoroughly well oiled or greased, and introduced with a gentle rotatory motion; the fact that the intestine slightly inclines to the left side being borne in mind. "For an infant at the breast an enema should not exceed one ounce in quantity: from one to five years, three or four ounces: and from five to ten or fifteen years, about six ounces" (Tanner). But these quantities are too small to ensure rapid action; they may safely be increased. Sedative, astringent, and nutritive enemata must be of very small bulk, it being intended that they be retained by the patient. To accomplish retention, select a time when the child is about to go to sleep, or after it has passed a motion: introduce the fluid, and upon withdrawal of the tube press with a folded towel against the fundament for a quarter of an hour or less, till the sensation produced by the introduction of the tube has passed away.

Enemata. Purposes of. Cautions. Bulk of. To accomplish retention of.

The glycerine enema is admirable and very effective. By means of a small glass syringe it is only necessary to throw half to one drachm of pure glycerine undiluted into the bowel, which will almost immediately void its contents.

Glycerine enema.

The sustaining effect of nutritive enemata, if properly and sufficiently frequently administered, is wonderful. By their aid a child may often be able to tide over an

Nutritive enemata.

CHAP. LIX.

illness to which it would otherwise certainly succumb. Milk, beef-tea, and egg enemata, combined or separately, when often repeated, set up irritation, but by adding a teaspoonful of *Liquor Pepticus* for every four ounces, absorption is facilitated and the liability to irritation diminished.

Opium when injected.

Opium administered by the bowel is said to act with greater power than when given by the mouth, wherefore it is a good plan to employ only half the usually prescribed quantity when it is contained in an enema.

Expectorants.

EXPECTORANTS are medicines which increase the secretion of phlegm or mucus, which then being made thinner is more easily coughed up. This class of medicines acts with great certainty. They vary much in their nature: the depressing expectorants are given in the early stages of inflammatory affections of the chest: under this head are included ipecacuanha and antimony.

Action of.

Varieties of.

1. Depressant.

2. Stimulant.

The stimulating expectorants are given in the latter stages of chest affections, and they include squills, senega, carbonate of ammonia, and one or two others. Judicious combination of these with various other drugs greatly enhances their action.

Paregoric elixir contains opium.

The compound tincture of camphor, or paregoric elixir, is a most useful expectorant of a sedative nature; but it contains a small proportion of opium, one quarter of a grain in every sixty drops, and therefore is to be used with caution in the case of younger children.

Assafœtida.

Assafœtida ("hing" of the bazaars) is a good and useful stimulating expectorant, which may supply a want when other drugs are not at hand. By rubbing down in a mortar five drachms of assafœtida in a pint of hot water, straining and setting aside to cool, a

mixture may be prepared, of which a teaspoonful may be given four or five times a day (Waring).

Purgatives. Abuse of.

PURGATIVES are a much misused class of medicines; in childhood there are few things more pernicious than their constant administration.

Those most suitable.

For all ordinary purposes the child should be restricted to castor oil and rhubarb when an aperient is necessary; these medicines being certain, but mild and unirritating in their action. Some purgatives act with great violence, and if handled injudiciously may cause irritation bordering upon inflammation.

Fruits as laxatives.

Many fruits and simple and pleasant articles possess a laxative action, which will be made use of by a thoughtful parent before rushing to the medicine chest: such are figs, prunes, tamarinds, honey, treacle and manna.

Rhubarb.

Rhubarb, in addition to its aperient properties, also acts as an astringent after its purgative action has ceased; or when given in very small doses its astringent action alone is exerted. Hence it is not to be used in cases of habitual constipation, and it is most valuable where we wish merely to empty the bowels and afterwards secure their quietude.

Senna.

Senna is a good and simple aperient when we desire watery evacuations, but it sometimes gripes a good deal, wherefore it should always be mixed with an aromatic or carminative.

Castor oil.

Castor oil is the blandest of all purgatives; it acts thoroughly without producing any irritation or flatulence.

The more powerful aperients.

Some of the other purgatives included in the formulæ are of a powerful nature, such as aloes, scammony,

CHAP. LIX.

calomel, and podophyllin, and are only to be employed upon the occasions notified in the text.

Epsom salts.

Epsom salts, or sulphate of magnesia, is not a medicine to be used frequently, except in special cases. It is too lowering in its effects. When the object is to withdraw watery fluid from the system, then it is very valuable.

Refrigerants

REFRIGERANTS constitute a class of medicines which give comfort in fevers by allaying thirst and cooling the body generally. Some of them are aperient in their action, a fact which should be remembered. Some being agreeable to the taste, there may be a temptation to use them habitually. Thus abused they are hurtful, and induce poverty of blood.

Stimulants. Not much required.

STIMULANTS of a medicinal nature are sometimes required in the treatment of the diseases of childhood.

Action of.

They increase the force of the heart's action, and produce a feeling of warmth and energy temporarily. Ammonia, ether, and camphor are the chief stimulants which are employed in cases of exhaustion and debility.

Alcohol.

Alcoholic stimulants are to be administered to children with great caution, because their too free use is succeeded by serious depression. In some affections of great exhaustion, as, for instance, violent watery purging, if used to excess, alcohol produces a narcotic depression, which greatly enhances the danger to the patient. Whenever the fontanelle (p. 159) is depressed, stimulants are always indicated. The white wine whey (receipt 8) is an excellent and very delicate stimulant for infants, particularly when the stomach is irritable. Brandy is valuable, but when combined with eggs (receipt 10) it forms a capital combination of food and stimulant. St.

Raphael tannin wine is luscious and well suited to elder children—more palatable to them than the natural wines, it is a reliable and inexpensive preparation (*see* also pp. 181, 198 and 203). Except in an emergency, stimulating foods, such as meat-juice, &c., are to be preferred to alcohol.

Tonics. TONICS are a very numerous class of drugs. They increase the tone or power of the nervous system, and are broadly divided into vegetable tonics and mineral tonics.

Classified.

Action of. Some tonics, such as iron and cod liver oil, act more as food than medicine, as they are directly absorbed and improve the quality of the blood, whereby the body is better nourished. The mistake people make concerning this class of medicine is that they expect too immediate an action in the first place, for which reason tonics of this nature are often too readily abandoned; and secondly, they seldom continue them sufficiently long to allow of a permanent impression being made. As a rule, such medicines should be persisted in for three or four months. From a stimulant we expect an immediate effect; from a tonic, never.

Iron or steel causes the motions to assume a black colour, darker than, though something like, that occasioned by bismuth.

When not to give. Tonics should almost not be given to a child whose bowels are disordered; they are not then likely to be of any service, absorption being too imperfect. Some tonics, notably iron, may act as direct irritants, and increase the mischief in these cases. In short, they are medicines for convalescence, when they will increase the appetite, the force of the pulse, and the muscular strength.

CHAP. LIX.

Cod liver oil.

Cod liver oil, as stated, is more a food than a medicine; but there is a very common mistake made regarding it, namely, that it is usually given in doses far too large. The stomach is capable of digesting but a very small quantity of this oil, and if more be given than the stomach can dispose of, the remainder passes off unchanged by the bowels, and it may then be both seen and smelt in the stools. "For a child under two years of age ten drops will be a sufficient dose at first. The quantity, after the first few days, may be gradually increased, but a careful watch must be kept upon the stools, and the appearance of any oil unchanged in the evacuations is a sign that the quantity must be reduced. For a child of this age we can seldom go beyond thirty drops for the dose three times in the day. If it be found to impair the appetite, or to interfere in the slightest degree with digestion, its use should be immediately discontinued" (Eustace Smith).

Proper mode of administration.

Vegetable tonics.

Certain tonics, such as quinine and bark, act chiefly upon the nervous system, bracing up the body and increasing the appetite. Others, such as chiretta, hemidesmus, and gentian, act upon the stomach and digestive organs, and through them improve the general tone. Arsenic is an incomparable tonic in certain cases, especially when the nervous system is chiefly affected.

# SOME RECEIPTS CONNECTED WITH ALIMENTATION.

### 1. *Lime Water.*

Add two ounces of slaked lime to one gallon of pure water, in a stoppered bottle, shaking well for several minutes. Allow the bottle to stand without any agitation till the superfluous lime is deposited at the bottom, the solution above being perfectly clear. The bottle should stand for twenty-four hours before the clear solution is drawn off for use. Water is capable of dissolving only a certain small proportion of lime, the proper proportion to constitute "lime water" being just as much as the water can dissolve.

A bottle containing lime water should always be kept well corked; access of air spoils lime water.

### 2. *Saccharated Solution of Lime.*

Take of slaked lime one ounce, and of powdered white sugar two ounces.

Mix them carefully into a powder in a mortar. Transfer the powder to a bottle, and add one pint of water, shaking the bottle well.

The quantity required for each meal is from fifteen to twenty drops of the clear solution.

### 3. *Barley Water.*

Two teaspoonfuls of washed pearl barley, one pint of water.

Put into a saucepan, and boil down to two-thirds. Strain.

A whole day's supply should not be made at once. It soon turns sour. Once made it should never again be heated to boiling.

### 4. *Gelatine Solution.*

A teaspoonful of good gelatine or isinglass.

Half a tumblerful of cold water.

Mix. Allow to stand for three hours. Turn into a cup. Stand the cup in a saucepan half full of water, and boil till the gelatine is dissolved.

When cold this forms a jelly, of which a teaspoonful is to be added to half a bottleful of milk and water food to prevent curdling in the stomach.

### 5. *Beef Tea.*

Put half a pound or a pound of rump steak, cut up into small pieces, into a copper covered saucepan, with one pint of cold water. Let it stand by the side of the fire for four or five hours, and let it then simmer gently for two hours. Skim well, and serve.

The meat should be as fresh as possible—the fresher the better—and should be cleansed beforehand of all fat and gristle. If this precaution be neglected, a greasy taste is given to the beef tea, which cannot afterwards be removed by skimming. Iron saucepans, if used, should be enamelled.

In re-warming beef tea which has been left to cool, care must be taken to warm the tea up to the point at which it is to be served, and no higher. It should on no account be allowed to boil. (Eustace Smith). Beef tea is a food stimulant, not a true food, and should never be wholly trusted to for nourishment in a prolonged illness.

### 6. *Juice of Raw Meat.*

Take a pound, or whatever quantity required, of the best rump steak, free from all fat. Cut it into the finest mince. Put it into a bowl. Add cold water, to which a few drops of diluted muriatic acid and a pinch of salt have been added, just sufficient to moisten the mass well. Set aside to stand for an hour, during which time it may occasionally be stirred. Strain through a coarse cloth, using pressure. The pulpy mass of flesh ought to be nearly bleached, while the liquid should be of a port-wine colour.

### 7. *Raw Meat.*

The lean of steak or chop pounded in a mortar into a pulp and then strained through a fine sieve. It may be eaten as it is, or diffused through jelly or broth. A dose of pepsine should always precede its consumption. A teaspoonful four times a day, may be increased to half a pound daily.

At first the motions become very fetid, but this soon passes off.

### 8. *White Wine Whey.*

To a breakfast-cupful of new milk in a saucepan, placed upon a fire, add a wineglassful of good sherry when the boiling point has been reached. Then boil again for one minute and strain off the curd. Sweeten with sugar. A feeble infant will take a tablespoonful every fourth hour.

### 9. *Peptonised Milk.*

Add a pint of boiling water to a pint of new milk. Then add two teaspoonfuls of Benger's *liquor pepticus*, and twenty grains of the bicarbonate of soda. Mix well, and put it aside *in a warm, but not hot place* for an hour, in a jug. Then pour it again into the saucepan and boil for two minutes

to prevent further action of the ferment. Sweeten to taste with sugar of milk.

The same object may be more easily attained by the use of "Fairchild's Peptonising Powders," or Savory and Moore's "Peptonising Pellets," which are very convenient. Of the latter, one is required for each pint of milk, to which, after it has been brought to the proper temperature, the pellet is added; a quarter of an hour's delay completes the process.

### 10. *Brandy and Egg Mixture.*

Rub the yolks of two eggs up with about half an ounce of sugar. To this add four ounces of cinnamon water, and finally four ounces of brandy.

Half to one teaspoonful as often as necessary for a child of a year old.

### 11. *Cheadle's Bread Jelly with Meat-juice and Cream.*

Is prepared by soaking in cold water for six or eight hours four ounces of stale bread, made preferably with "seconds flour"; after being well squeezed the pulp is boiled in fresh water for 1½ hour, strained and rubbed through a fine hair sieve and allowed to cool to a jelly. A tablespoonful is to be mixed with eight ounces of water previously boiled. To five teaspoonfuls of the solution, six teaspoonfuls of raw meat-juice, two teaspoonfuls of cream, and about ½ teaspoonful of white sugar are added. The meat-juice must not be added to the food while hot. From two to three ounces of raw meat-juice may thus be given in twenty-four hours.

This is an excellent food when it is necessary to suspend milk temporarily. The proportion of meat-juice may be increased as required by the case.

# PRESCRIPTIONS.

## CLASSIFIED AS FOLLOWS:—


| | PAGE | | PAGE |
|---|---|---|---|
| Alteratives ... ... ... | 456 | Emetics ... ... ... | 461 |
| Anthelmintics ... ... ... | 456 | Enemata ... ... ... | 462 |
| Antispasmodics, Sedatives, and Carminatives ... | 457 | Expectorants ... ... ... | 462 |
| | | Purgatives ... ... ... | 463 |
| Applications ... ... ... | 458 | Refrigerants ... ... ... | 464 |
| Astringents ... ... ... | 460 | Stimulants ... ... ... | 465 |
| Diaphoretics ... ... ... | 461 | Tonics ... ... ... ... | 465 |


N.B.—The difficulty of stating the doses of medicines for children of different ages is very great—indeed, it is impossible to do so in a series of prescriptions. A usual rule, which is pretty generally applicable, is here stated with the object of releasing parents from an occasional dilemma; at the same time it should be mentioned that it is not universally applicable to all drugs, but care has been taken in the text to give special directions when medicines requiring particular care are suggested.

RULE.—*Add* 12 *years to the child's age and divide the actual age by the result. The fraction so obtained will give the fraction of the adult dose suited to the child.* Example, a child is aged 4 years. 4 *plus* 12 is 16. Therefore four-sixteenths (that is, one-fourth) of the adult dose is the proper dose for the child in question. Put shortly: $4 + 12 = 16 \therefore \frac{4}{16} = \frac{1}{4}$ the adult dose.

## ALTERATIVES. (p. 436.)

### 1. Alterative and sedative.

Take
Iodide of potassium, twelve grains.
Bromide of potassium, half a drachm.
Water, one ounce. Mix.

Dose—One teaspoonful every third or fourth hour (an ordinary dose for two years, but many exceptions).

### 2. Chlorate of Potash mixture.

Take
Chlorate of potash, half a drachm.
Water, four ounces. Mix.

Dose—Two teaspoonfuls every third or fourth hour for a child of one or two.

### 3. Alterative and tonic.

Take
Iron wine, half an ounce.
Syrup of tolu, half an ounce.
Fowler's solution of arsenic, twelve minims.
Dill water, one ounce. Mix.

Dose—One teaspoonful three times a day, after meals (for age of two years).

According to Erasmus Wilson, this is almost a specific in eczema of children.

Or,

Cod liver oil, one ounce.
Yolk of egg, half ounce.
Fowler's solution of arsenic, twenty-two minims.
Syrup, two drachms.
Pure water, two ounces. Mix.

Dose—One teaspoonful three times a day, immediately after meals, for a child 1½ year old and upwards.

## ANTHELMINTICS. (p. 440.)

### 4. Santonin.

Take
Santonin, three grains.

Compound scammony powder, three grains.
Calomel, one grain. Mix.
The powder to be taken as directed at page 329 (for six or eight years).
Santonin is a specific for round-worms.

## 5. Pomegranate.

Take of fresh-sliced pomegranate root-bark, two ounces. Of water, two pints. Boil down to one pint and strain. Of this, one to two table-spoonfuls should be taken fasting, early in the morning, and repeated every half-hour until four doses have been taken. An aperient should be given subsequently—castor oil being the most suitable. The worm will probably be expelled in about twelve hours (*vide* p. 330).

## 6. Male fern.

Take
Liquid extract of male fern, twenty minims.
Essence of ginger, twenty drops.
Syrup, two drachms.
Water to half an ounce. Mix.
The draught to be taken as directed at p. 330. (For children of three years and upwards.)

## ANTISPASMODICS, SEDATIVES, AND CARMINATIVES. (p. 440.)

## 7. Stimulant antispasmodic.

Take (*a*)
Spirits of ether, forty minims.
Spirits of chloroform, forty minims.
Compound tincture of cardamoms, two drachms.
Spirits of nutmeg, half a drachm.
Oil of caraways, three minims.
Peppermint water, four and a half ounces. Mix.
Dose—One or two teaspoonfuls every three hours, for a child two years old, in colic, flatulence, and spasm (Tanner). *This should be kept ready made up.*

Or (*b*)
(in the absence of the above),
Take
Bicarbonate of soda, twelve grains.
Sal volatile, fifteen minims.
Glycerine, forty minims.
Peppermint water to one ounce. Mix.
A small teaspoonful as often as necessary (for an infant).

## 8. Chloral sedative. (p. 440.)

Take
Hydrate of chloral, six grains.
Tincture of belladonna, four minims.
Glycerine, one drachm.
Water, three drachms. Mix.
Half to one drachm for an infant.
One to two for a child over one year.
Not to be repeated for six hours at least.

Or,

Keep one ounce of a syrup of chloral, prepared by a chemist, strength $1\frac{1}{2}$ grain to each drachm, in stock. Dose—as above.

Or,

To each teaspoonful of the bromide mixture (9) add one grain of chloral (that is, eight grains to the whole).

## 8 (*a*). Sulphonal. (p. 440.)

Only soluble in hot fluids. Dose—ten to fifteen grains for a child of ten. Not to be repeated.

## 8 (*b*).

Take
Bromide of ammonium, forty grains.
Sweet spirit of nitre, one drachm.
Hydrate of chloral, nine grains.
Syrup of orange flowers, half an ounce.
Chloroform water to complete to three ounces. Mix.
One drachm every second hour for an infant one year old (Whitla).

## 9. Bromide of potassium. (p. 440.)

To be of active service as a sedative, this medicine must be used in full

doses. Two or three doses of ten grains each may be given at intervals of four hours to a child three years old if it is desired to ward off convulsions.

The following is a useful formula :—

Take of

Bromide of potassium, twenty-four grains.

Glycerine, two drachms.

Water up to one ounce.

Dose—A teaspoonful every second hour for an infant. (A drop of tincture of belladonna per dose is a good addition.)

## 10. Aromatic waters.

(a) Caraway seed water.

"A perfectly useful caraway water may be made in the nursery by boiling two teaspoonfuls of crushed caraway seeds, enclosed in a little muslin bag, in a pint of water, until the quantity is reduced to one half" (E. Smith).

(b) Dill water.

A useful dill water for the nursery, in the absence of the distilled preparation as obtainable from the chemist, may be made as follows :—

Take of Indian dill seeds (Soyah or shulpha of the bazaars), three drachms.

Hot water, half a pint.

Infuse till cold and then strain.

Dose—A dessertspoonful slightly sweetened with sugar.

Its efficacy is often much increased by the addition of a teaspoonful of lime water (Waring).

## APPLICATIONS. (p. 436.)

## 11. Dusting powder.

Take

Oxide of zinc, one part.

Powdered starch, three parts.

Mix thoroughly in a mortar (p. 437).

## 12. Soap liniment (a substitute for opodeldoc).

Take

Soft soap, two ounces.

Boiling water, one pint.

Dissolve thoroughly.

## 13. Cold lotion.

Take

Nitre, two ounces.

Sal ammoniac, two ounces.

Water, a quart. Mix.

An excellent application for inflamed bruises, or for the head in fever.

Or,

Take of vinegar, brandy, and water, equal parts, and mix.

Or,

Sal ammoniac, one and a half drachm.

Methylated spirits, six drachms.

Water to six ounces. Mix.

Note—Nitre, nitrate of potash, or saltpetre is called "*shora*" in Hindustani. Sal ammoniac, or chloride of ammonium, is known in the bazaar as "*nowsādar*."

## 14. Arnica lotion.

Take

Tincture of arnica, six drachms.

Rain water, eight ounces. Mix.

To be used as a lotion for sprains and bruises (p. 391).

## 15. Borax application.

Take

Borax, half a drachm.

Glycerine, one drachm.

Water, one ounce.

Applied to the throat in thrush, this is a specific.

## 16. Ringworm ointment.

Take

Chrysophanic acid, ten grains.

Lanolin or vaseline, one ounce.

Rub well together.

This stains linen.

17. Zinc ointment.
Take
Oxide of zinc, eighty grains.
Fresh lard, one ounce.
Rub together.

18. Stimulating liniments.
A useful *camphor liniment* may be made by dissolving one ounce of camphor in six ounces of cocoa-nut or any other bland oil.

Or,

For a good *turpentine liniment*,
Take
Camphor, one part.
Turpentine, sixteen parts.
Soft soap, two parts.
Rub together till thoroughly mixed.

19. Galls ointment.
Take
Galls (mai-phal of bazaars) powdered, one and a half drachm.
Ghee, one ounce. Mix.
Very useful in piles and protrusion of the bowel.

20. Itch ointment.
Take
Sulphur, one ounce.
Lard, four ounces.
Rub together.

21. Resin ointment.
Take
White damar (sufèd damar), five ounces.
Lard or kokum butter, eight ounces.
Wax, two ounces.
Melt with a gentle heat, stirring briskly as it cools (Waring).

22. Turpentine ointment.
Take
Turpentine, one ounce.
White or black damar, sixty grains.
Yellow wax and lard, half an ounce.
Melt well together, stirring it while cooling.

An excellent application for indolent and ill-conditioned ulcers (Waring).

23. Eye lotion.
Take
Alum, twelve grains.
Sulphate of zinc, six grains.
Infusion of poppy-heads, six ounces.
Mix.
To be used constantly.

24. Carbolic lotion.
Take
Carbolic acid (rendered fluid by a gentle heat if it be solid), one part.
Luke-warm water, sixty to eighty parts.
Shake well together.

25. Carbolic oil.
Take
Carbolic acid (fluid), one part.
Any bland oil slightly heated, twelve parts.
Shake thoroughly.

26. Glycerine of tannic acid.
Take
Tannic acid, one drachm.
Glycerine, four drachms. Mix.

27. Iodine.
The ointment is useful for the dispersion of swellings, and in cases of enlargement of the spleen.
Iodine paint is also supplied by the chemist. It should be painted over swellings of the glands, when acute inflammation has subsided, by means of a camel's-hair pencil, night and morning. If the child be very young, the paint should be diluted with brandy.

28. Aloes liniment.
Take
Tincture of aloes, half an ounce.
Soap liniment, one ounce. Mix.

To be rubbed daily for five minutes into the belly. Should not be employed in the case of a child under two years of age.

## ASTRINGENTS. (p. 442.)

### 29. Simple aromatic astringent.

Take
Aromatic chalk powder, thirty grains.
Tincture of catechu, one drachm.
Mucilage, two drachms.
Peppermint water to one ounce. Mix.
Dose—Half a teaspoonful three or four times a day for six months of age; one to two teaspoonfuls between twelve and twenty-four months. Very useful in simple diarrhœa.

Or,

Take
Aromatic chalk powder, thirty grains.
Bicarbonate of soda, eighteen grains.
Acacia powder, ten grains.
Tincture of catechu, one drachm.
Syrup of ginger, one drachm.
Peppermint water, six drachms. Mix.
Dose—One teaspoonful every three or four hours till relaxation ceases. For a child of one year.

Or,

(if dependent upon the Bazaar)
Take
Catechu powder, four grains.
Cinnamon, powdered, four grains. Mix.
The powder to be taken three times a day.

Or,

Bruised catechu, three drachms.
Bruised cinnamon, one drachm.
Boiling water, half a pint.
Macerate for two hours and strain.
Dose — One dessertspoonful three or four times a day.

### 30. Gallic acid.

Take
Gallic acid, one drachm.
Mucilage, half an ounce.
Water, two ounces. Mix.
Dose—One teaspoonful after every watery motion.
A direct astringent of value.

### 31. Bismuth and opium.

Take
Bismuth, thirty grains.
Bicarbonate of soda, twelve grains.
Compound powder of chalk with opium, twelve grains.
Mix thoroughly, and divide into six equal powders.
*Caution.*— Each powder contains one-twentieth of a grain of opium. Therefore this prescription should not be used for children under six months of age, and not more than one powder should be given to a child under nine months in the course of twenty-four hours. Two in the twenty-four hours should not be given till a full year of age has been completed, and so on, two powders for each year of age being allowable.
This medicine may be used in conjunction with any pure astringent.

### 32. Acid astringent.

Take
*Diluted* sulphuric acid (1 to 12 water), eighteen drops.
Tincture of catechu, thirty-six drops.
Syrup of ginger, two drachms.
Water, nine drachms. Mix.
Take two teaspoonfuls every fourth hour.
If the tincture of catechu be not at hand, gallic acid, twelve grains, may be substituted: or the solid catechu, eighteen grains, if it can be obtained tolerably pure.

Or,

Take
*Diluted* nitric acid (1 to 5 water), sixteen minims.
Laudanum, four minims.
Tincture of capsicum, two minims.
Tincture of ginger, sixteen minims.

Glycerine, enough to sweeten.
Water up to one ounce.
One drachm three times in twenty-four hours to a child a year old.
Half the quantity for a child of six months will frequently succeed where ordinary astringents have failed, *but the mixture contains opium* (p. 435).

### 33. Alterative astringent.

Bael fruit (the half-ripe fruit, if procurable, is best; but the dried fruit also answers) is a very valuable remedy in cases of diarrhœa and dysentery when febrile symptoms have subsided.
Take of the soft gummy interior, two ounces. Mix with three or four ounces of water; sweeten to the taste. Take one-fourth part twice or three times a day. (Caution, *see* p. 442.)

### 33 (*a*). Antiseptic astringent. (*See* p. 304.)

### 34. Oxide of Zinc.

Take
Oxide of zinc, sixteen grains.
Glycerine, three drachms.
Mucilage, half an ounce.
Water to two ounces. Mix.
A teaspoonful three or four times a day for an infant. The quantity of zinc may be increased for a child of one year.

### 35. Cold.

Ice broken into small pieces, and put into a bladder, applied to the head in cases of fever with headache, or of inflammation of the brain, is a valuable remedy (p. 177). It may also be used in lumps or pulverised, to prevent bleeding from wounds, or to moderate swellings and inflammations.

Or,

### The freezing mixture,

Consisting of five ounces of sal ammoniac, five ounces of saltpetre, and ten ounces of water mixed together and enclosed in a bag, will cause the thermometer to sink from 50° to 10°.

## Diaphoretics, or Fever Medicines. (p. 443.)

### 36. Sweating mixture.

Take
Nitrate of potash, ten grains.
Ipecacuanha wine, two drachms.
Syrup, two drachms.
Barley water, two ounces. Mix.
Dose—One teaspoonful every second or third hour, for a child under six months of age. Two teaspoonfuls up to twelve months. A dessert-spoonful beyond this age, up to the second year, after which a table-spoonful may be given in common colds and fevers.

### 37. Antifebrin. (pp. 175, 199, 444.)

### 38. Fever mixture.

Take
Solution of acetate or citrate of ammonia, half an ounce.
Nitrate of potash, twenty grains.
Sweet spirits of nitre, one drachm.
Syrup, three drachms.
Water, three ounces. Mix.
Dose—Same as No. 36.

## Emetics. (p. 444.)

### 39. Simple emetic.

Take
Ipecacuanha powder, one grain.
Sugar, three or four grains. Mix.
This powder may be given to the youngest infant every quarter of an hour, till vomiting results.

Or,

Country ipecacuanha (anta-mul of the bazaar), the powdered dry leaves, of which three or four grains will cause vomiting. In larger doses it may be substituted for ipecacuanha in treating dysentery.

Or,

Alum may be used in the absence of ipecacuanha. Three drachms should be dissolved in one ounce of syrup. Of this one-third part may be given every quarter of an hour or ten minutes.

### 40 Stimulating emetic.

Take

Ipecacuanha powder, eight grains.
Ipecacuanha wine, one ounce. Mix.

Dose—One teaspoonful with water every quarter of an hour, till vomiting is produced.

### 41. Powerful emetic.

Take

Sulphate of copper, two to six grains.
Water, half an ounce. Dissolve.
One quarter part every ten minutes in rice water till vomiting occurs.
Useful in the third stage of croup, after one year of age.

Or,

Sulphate of zinc (*see* pp. 420, 446).

### 42. Mudar. (p. 446.)

Is a good substitute for ipecacuanha in the treatment of dysentery. If not given with the usual precautions, it will cause vomiting. The dose and mode of administration are the same as of ipecacuanha.

## Enemata. (p. 447.)

### 43. Worm injection.

Take

Table salt, one to two teaspoonfuls.
Olive oil, half an ounce.
Conjee water, three ounces. Mix.
Useful for killing and expelling thread-worms.

### 44. Purgative enema.

Take

Castor oil, two drachms.
Thin warm gruel, three ounces. Mix.
Useful in ordinary constipation.

Or,

Aloes, ten to twenty grains.
Boiled milk, three ounces. Mix.
Useful when castor oil is insufficient.

### 44*a*. Glycerine enema. (p. 447.)

### 45. Purgative and antispasmodic enema.

Take of

Castor oil, two drachms.
Turpentine, two drachms.
Tincture of assafœtida, half a drachm.
Rice water, three ounces. Mix.
Very useful in convulsions.

## Expectorants. (p. 448.)

### 46. Sedative and expectorant.

Take of

Spirits of nitric ether, one drachm.
Compound tincture of camphor, thirty-six minims.
Ipecacuanha wine, twenty-four minims.
Syrup, three drachms.
Water, one and a half ounce. Mix.

Dose—One teaspoonful every fourth hour.

*Caution.*—This mixture contains a little more than one-eighth part of a grain of opium.

### 47. Stimulating expectorants.

Take of

(1) Carbonate of ammonia, eight grains.
Ipecacuanha wine, one drachm.
Tincture of senega, two drachms.
Oxymel of squills, three drachms.
Water, three ounces. Mix.

Dose — One teaspoonful every second hour for an infant under one year of age. Double this quantity for between one and two years. A dessertspoonful after the latter age.
Useful in the obstinate coughs of weakly children.

Or,

(2) Ipecacuanha wine, thirty-six minims.
Carbonate of ammonia, five grains.
Syrup, two drachms.
Water, ten drachms. Mix.

Dose — Two teaspoonfuls every fourth hour, for a child of two years.

Or,

(3) Carbonate of ammonia, twelve grains.
Tincture of squills, seventy-two minims.
Chloric ether, forty-eight minims.
Tincture of tolu, half an ounce.
Water, three ounces. Mix.

Dose—Two teaspoonfuls every third or fourth hour.

## PURGATIVES. (p. 449.)

### 48. Castor oil.

Dose—Half a teaspoonful for a child under one year of age. A full teaspoonful is sufficient for a child of any age. May be mixed with an equal quantity of glycerine.

### 49. Red mixture.

Take of
Rhubarb, ten grains.
Carbonate of magnesia, thirty grains.
Sal volatile, half a drachm.
Aniseed oil, two drops.
Water, two ounces. Mix.

Dose — A teaspoonful, repeated every fourth hour till it operates.

### 50. Gregory's powders.

Take of
Rhubarb, two drachms.
Magnesia, six drachms.
Ginger, one drachm. Mix thoroughly, and pass through a fine sieve.

Dose—Five to twenty grains.

### 51. Castor oil emulsion.

Take of
Powdered gum acacia, three drachms.
Powdered loaf sugar, three drachms.
Oil of peppermint, two drops.
Castor oil, one ounce.
Rub the acacia, sugar, and oil of peppermint together into a powder; add about six drachms of water; then add the castor oil by degrees, with a little more gum or a little more water, as may be necessary to make a perfect emulsion. Then add water slowly to bring the quantity to *four ounces*. Of this mixture one tablespoonful equals one teaspoonful of castor oil, and a teaspoonful equals fifteen drops.

Dose—For inflammatory diarrhœa, half to a whole teaspoonful every fourth or sixth hour for a child of two or three years.

Or,

Castor oil, one drachm.
Gum acacia, twenty grains.
Syrup, two drachms.
Caraway water to one ounce.

Dose—One drachm (equal seven and a half drops) every fourth hour, or oftener.

### 52. Senna.

Take of
Senna leaves, one ounce.
Bruised ginger, half a drachm.
Bruised cloves, half a drachm.
Boiling water, ten ounces.
Stand for half an hour.

Dose—For a child of two years, one teaspoonful. The simple infusion without the aromatics may be given with sugar and milk, when it can hardly be distinguished from ordinary tea.

### 53. Salts and senna.

Take of
Sulphate of magnesia, one drachm.
Infusion of senna, one ounce.

The draught, to be taken by a child of ten or twelve.

### 54. Epsom salts draught.

Take of
Sulphate of magnesia, twenty grains.
Syrup of ginger, one drachm.
Peppermint water, three drachms.

The draught, for a child above a year old.

### 55. Continuous purgation.

Take of
Sulphate of magnesia, two drachms.
Nitrate of potash, twenty grains.
Syrup, half an ounce.
Water, one ounce. Mix.

Dose—Two teaspoonfuls twice or three times a day, when it is desired to keep up purgation, as in head affections of young children.

### 56. Strong purgatives.

Take of
Calomel, one grain.
Jalap, five grains.
Powdered ginger, two grains. Mix.

The powder, suitable for a child of eight or ten years. This should be followed by a dose of senna or Epsom salts in a few hours.

Or,

Take of
Compound powder of scammony, two grains.
Calomel, half a grain.

The powder, for a child of one year.

### 57. Podophyllin.

Take of
Podophyllin, one grain.
Alcohol, one drachm. Dissolve.

Dose—Five to ten drops in syrup twice or three times a day.

### 58. Aloes.

Take of
Powdered aloes, one drachm.
Syrup, one ounce. Mix.

Dose—One teaspoonful every third hour till a satisfactory result is obtained.

Or,

By adding to the above, sulphate of iron, four grains, a mixture is formed which is most valuable in some forms of constipation (p. 292).

### 59. Other purgatives.

Other useful and portable aperients are—

(*a*) The compound liquorice powder of the German pharmacopœia, of which five to ten grains or more, mixed with milk, taken early in the morning, is a mild and agreeable laxative.

(*b*) The liquid extract of cascara, dose two to four drops twice a day.

## Refrigerants. (p. 450.)

### 60. Lemonade.

Five or six limes sliced, added to one pint of boiling water. Allowed to stand till cool, then strained and sweetened to taste.

Or,

Tamarinds, one ounce.
Water, one pint.

Make an excellent cooling drink, but it must be recollected that it possesses aperient properties.

### 61. Seidlitz powder for children.

Take of
Bicarbonate of soda, ten grains.
Tartrated soda, thirty grains.

Dissolve in one ounce of water, adding a little syrup and essence of lemon. Then in another glass dissolve eight grains of tartaric acid in one tablespoonful of water. The contents of the glasses should be poured together, and the whole drank while effervescing. An agreeable, mild aperient in the warm weather for strong children, but it is not one which should be frequently used.

### 62. Effervescing draughts.

Take of
Bicarbonate of potash, one drachm.
Water, sweetened and flavoured with syrup of lemon, three ounces.
Mix, and put into a bottle; then dissolve forty-two grains of citric acid in three ounces of water in another bottle.
One tablespoonful of each thrown together will form a refreshing draught.

### 63. (*a*) Fever drink.

Nitrate of potash (nitre), ten grains.
Barley water, one pint.
A wineglassful occasionally to quench thirst.

### (*b*) Fever drink.

Take of
Chlorate of potash, twenty grains.
Rice water, one pint. Mix.
A wineglassful to be taken from time to time to quench thirst.

## STIMULANTS. (p. 450.)

### 64.

Take of
Diluted hydrochloric acid, sixteen minims.
Spirits of chloroform, sixteen minims.
Camphor water, one ounce. Mix.
Dose—One teaspoonful every two or three hours (for a child of two).

### 65.

Take of
Carbonate of ammonia, twelve grains.
Chloric ether, half a drachm.
Infusion of cloves, four ounces. Mix.
Dose—One drachm to a dessert-spoonful three times a day (for one year).

## TONICS. (p. 451.)

### 66. Quinine tonic.

Take of
Quinine, four grains.
Lime juice, twenty drops (or four drops of diluted sulphuric acid).
Infusion of orange peel, two ounces.
Mix.
Dose — One to two teaspoonfuls three times a day, shortly before food.

### 67. Antiperiodic.

Take of
Quinine, twenty grains.
Lime juice, one teaspoonful (or twenty drops of diluted sulphuric acid).
Syrup, two drachms.
Water to one ounce. Mix.
Dose—One eighth part for a child a year old. Double that quantity for a child of two years. Strong doses of quinine should, as far as possible, not be given on an empty stomach. (*See* pp. 185, 202.)

### 68. Steel and quinine tonic.

Take of
Tincture of steel, twenty-four drops.
Quinine, four grains.
Water, one ounce. Mix.
Dose—One teaspoonful three times a day after meals, for a child of two years.

Or,

Citrate of iron and quinine.
Dose—One to two grains in water.

### 69. Chiretta.

#### (*a*) Wine.

Take of
Bruised chiretta, two ounces.
Sherry wine, one bottle.
Allow to stand for a week.
Dose — One to two teaspoonfuls twice or three times a day.

### (*b*) Infusion.

Take of
Bruised chiretta, one ounce.
Cold water, one pint.
Bruised cloves or cinnamon, one drachm.

Infuse for six hours and strain.

Dose — A dessertspoonful to a tablespoonful twice or three times a day, before food.

### 70. Aperient tonic.

Take of
Tincture of steel, one drachm.
Epsom salts, one drachm.
Quinine, six grains.
Water, six ounces. Mix.

Dose — One tablespoonful three times a day for a child of from six to eight years.

A valuable tonic in the dropsy following malarial poisoning, when there is also a tendency to constipation.

Or (*b*),

Epsom salts, forty grains.
Diluted sulphuric acid, sixteen minims.
Sulphate of iron, four grains.
Syrup of ginger, half drachm.
Peppermint water, to two ounces. Mix.

Dose—One drachm for a child a year old.

### 71.

Take of
Syrup of iodide of iron, ten minims.
Cod liver oil, half a drachm.

To be given three times a day, after food, to a child of two years.

Or,

The syrup of iodide of iron may be given alone.

Or,

The syrup of the phosphate of iron, ten to twenty drops three times a day, after meals.

Or,

Wine of iron (made by mixing one drachm of citrate of iron and ammonia with an ounce of rectified spirits of wine and seven ounces of water). Dose — One drachm and upwards.

Or,

Parrish's chemical food, a quarter, half, or a full teaspoonful in as much water, to children of two, five, and ten respectively.

### 72. Country sarsaparilla.

Take of
Hemidesmus root (called in the bazaar Hindi-Sal-sa or jungli chaubelli), bruised, one ounce.
Boiling water, half a pint.

Infuse in a covered vessel for half an hour and strain.

Dose—One to three tablespoonfuls three times a day. The efficacy of the medicine is much increased by taking it when warm. Sugar and milk added to it make it so like tea that children will readily take it. Waring says it is a "particularly useful tonic for the pale weakly offspring of Europeans in India."

### 73. Cod liver oil.

For mode of administration, *see* page 452.

### 74. Pepsine.

The dose of the wine is a quarter to half a teaspoonful given with meals.

Of the powder, half a grain to two grains given in water with a drop of hydrochloric acid, three times a day with meals.

# TABLE OF WEIGHTS AND MEASURES.

## Solid Measure.

| | | Marked thus. |
|---|---|---|
| 20 grains* make | ... ... ... one scruple | ℈j |
| 3 scruples „ | ... ... ... one drachm | ʒj |
| 8 drachms „ | ... . . ... one ounce | ℥j |
| 12 ounces „ | ... ... ... one pound | ℔j |

## Fluid Measure.

60 drops or minims make 1 drachm, equal to one ordinary-sized teaspoonful.

8 drachms make 1 ounce, equal to two ordinary-sized tablespoonfuls.

20 fluid ounces make 1 pint, and eight pints equal one gallon.

* The grain weights are usually marked with dots corresponding to their numbers, thus: | 0 | | 0 / 0 | | 0 / 00 &c., &c.

# INDEX.


A

PAGE

Abdomen, examination of ... 160
inflammation within ... 316
Ablution ... ... ... 29, 40, 120
Abscess, of breast ... 32, 48
behind throat ... ... 251
Accidental poisoning ... ... 419
Accidents... ... ... ... 391
at birth ... ... ... 34
with foreign substances ... 412
Acidity ... ... ... ... 98
Administration of remedies ... 434
Admixture, of diet ...45, 100, 150
of dietary principles ... 56
Adulteration of milk ... 60, 71
Age, to send child to Europe ... 15
food at each ... ... 95
for vaccination ... ... 108
sickness according to ... 130
Ague ... ... ... ... 205
Air, atmospheric... ... ... 116
of marshes ... ... 142
town and country ... ... 117
Alcohol, medicinally ... ... 450
injurious as diet ... ... 103
in fevers ... ... ... 181
Alimentary principles ... ... 55
Alteratives ... ... 436, 456
Alum, purification of water by... 72
emetic ... ... ... 446
Anatomical peculiarities of infancy ... ... ... 18, 67
Animal food ... ... 67, 101
Anthelmintics ... ... 440, 456

PAGE

Antidotes... ... ... ... 420
Antifebrin ... 175, 199, 444
Antispasmodics ... ... 440, 457
Aperients to newly born ... 32
pregnant women ... ... 26
Appetite, effects of climate upon 21
Applications ... ... 436, 458
April, health during ... ... 126
Ardent fever ... ... ... 187
Arsenic ... ... 335, 436, 437
Artery, wound of ... ... 392
Artificial feeding ... ... 91
results of ... ... 87, 89, 91
food for newly born 31, 93
palate ... ... ... 39
respiration ... ... ... 35
Assafœtida ... ... ... 448
Ass's milk ... ... ... 57
Asthma ... ... ... ... 283
Astringents ... ... 442, 460
misuse of ... ... ... 298
Asylum, Lawrence ... ... 23
Orphan, Calcutta ... ... 8, 17
Atrophy ... ... ... ... 141
August, health of ... ... 127

B

Bael fruit... ... ... ... 442
Barley water ... ... 92, 96, 453
Bath, cold, in fevers ... 173, 199
hot and warm ... ... 439
temperature of ... 28, 122, 439

| | PAGE |
|---|---|
| Bath, vapour | 438 |
| mustard | 439 |
| Bathing | 120 |
| of newly born | 29 |
| Bedding, disinfection of | 138 |
| Bed-sores | 196 |
| Beef-tea | 454 |
| Beer, during nursing | 46 |
| Belladonna | 288, 385 |
| Belly, indications from | 160 |
| Biedert's cream mixture | 97 |
| Birth, management at | 28 |
| Bites of animals | 404 |
| Black stools | 451 |
| Bleeding (hemorrhage) | 392 |
| Bleeding from navel-string | 37 |
| Blisters | 437 |
| Blood, vomiting and purging | 39 |
| Bloodlessness | 208, 345 |
| Boiling, of milk | 62 |
| purification of water by | 72 |
| Boils | 380 |
| Bowel, protrusion of | 318 |
| Bowels, affections of | 290 |
| non-action of, in new-born | 38 |
| of newly-born infant | 40 |
| of pregnant woman | 26 |
| inflammation of | 296, 307 |
| information gained from | 160 |
| in fevers | 180 |
| in typhoid fever | 197 |
| obstruction of | 295 |
| Brandy and egg mixture | 455 |
| Brain, in infancy | 18 |
| inflammation of | 345 |
| Bread-jelly | 455 |
| Breasts, when to give the | 30, 32 |
| management of | 43 |
| Breathlessness | 283 |
| Bronchitis | 278 |
| chronic | 282 |
| Broth, when allowable | 81, 100 |
| Bruises | 391 |
| Burns | 397 |

C

| | |
|---|---|
| Calcutta, infant mortality of | 7, 13, 118 |
| according to race | 9, 130 |
| Cancrum Oris | 246 |
| Carbolic acid | 139, 229, 438 |
| Carbonic acid gas | 116, 426 |
| Carminatives | 441, 457 |
| Carron oil | 398 |
| Causes of diseases | 141 |
| Cerebro-spinal fever | 237 |
| Chest, examination of | 163 |
| affections | 272 |
| expression in | 158 |
| Chicken-pox | 155, 231 |
| Child-crowing | 254 |
| Chills, dangers of | 22, 121 |
| productive of fevers | 143 |
| Chloral | 440 |
| Chloride of lime | 139 |
| Choking | 413 |
| Cholera | 321 |
| mixtures and pills | 323 |
| spreading and prevention | 144 |
| Chorea | 365 |
| Classification, of food-principles | 55 |
| of fevers | 182 |
| Cleanliness, want of, a cause of disease | 41, 119, 240 |
| of utensils | 52, 62 |
| Cleft-palate | 38 |
| Climate, effects of | 15 |
| Clothing | 110 |
| bed, in sickness | 178, 207 |
| changing of | 113 |
| disinfection of | 138 |
| Cod liver oil | 452 |
| Coins swallowed | 412 |
| Cold bath | 121 |
| in fevers | 173, 199 |
| Cold, local application of | 177, 443 |
| Colic | 319 |
| Compound fractures | 409 |
| Condensed milk | 93 |
| Condy's fluid | 73, 140, 245 |
| Congestions in hot climates | 19 |
| Constipation | 290 |
| Constitution, effects of climate upon the | 15 |
| Consumption caused by over-lactation | 87 |
| Contagium particles | 135 |
| Contamination of water | 71 |
| Continued fevers | 182 |
| Convulsions | 350 |
| order of mortality from | 129 |

PAGE

Convulsions, excessive deaths in England ... ... .. 11
causes and prevention ... 151
Cooling drinks ... ... 450, 464
Copper emetic ... ... ... 446
Cord, management of ... ...29, 40
Corrosive poisons ... ... 419
Cotton clothing ... ... ... 112
Cough ... ... ... ... 272
Cow's milk ... ... ... 58
Cream, added to food ... 93, 95, 455
a test of milk ... ... 60
Croup ... ... ... ... 253
Cry of the infant ... ... 159
Cubic space necessary ... ... 118
Curdling of milk... ... 61, 80, 92
Cut wounds ... ... ... 394

D

Dalby's carminative ... ... 435
December, health during ... 128
Delirium in fevers ... 181, 198
Demeanour, child's ... ... 158
Dengue ... ... ... ... 232
Dentition (*see* Teething).
Development affected by food... 88
Diaphoretics ... ... 443, 461
Diarrhœa ... ... ... ... 298
acute ... ... ... ... 300
chronic ... ... ... 312
inflammatory ... ... 307
prevention of ... ... 150
nature of evacuations in ... 160
during teething ... ... 78
during artificial feeding ... 97
fatality of ... ... ... 129
during cholera epidemics ... 146
Diet (*see* Food).
principles of... ... ... 54
during dentition ... ... 79
of pregnant woman ... 26
of nursing woman ... ...45, 51
at each age ... ... ... 94
Diphtheria ... ... ... 260
quarantine in ... ... 154
Dirt, effects of ... ... 41, 119, 240
Discharges from ears ... ... 388
Diseases, spreading of ... .. 134
order of frequency of ... 128

PAGE

Diseases, Indian and English compared ... ... ... 129
Disinfection ... ... 138, 139
of bowel evacuations ... 146
Doses for children ... ... 456
Dress (*see* Clothing).
Drinking water (*see* Water).
Dropsy ... ... ... ... 367
after scarlatina ... ... 221
Dysentery... ... ... ... 307
prevention of ... ... 150

E

Ear, inflammation of ... ... 387
foreign substances in ... 414
Eczema ... ... ... ... 374
Emetics ... ... ... 444, 461
Emotions, maternal ... 26, 27, 48
Enemata ... ... ... 447, 462
England, infant mortality in 3, 4, 10
sickness in, compared with India ... ... ... 129
Enlargement of tonsils ... ... 250
spleen ... ... ... 208
Enteric fever ... ... ... 190
Epilepsy in the nurse ... ... 48
Epsom salts ... ... ... 450
Errors, popular
purgatives ... ... 32, 290
"infant foods" ... ... 68
drinking water ... ... 69
teething ... ... 77, 78
vaccination ... ... ... 106
lancing the gums ... ... 79
feeding ... 31, 65, 81, 152
nurse's diet ... ... ... 46
"soothing" medicines ... 435
cold water in fevers ... 174
Eruptive fevers ... ... 182, 211
prevention of ... ... 147
Eruptions (*see* Skin Disease).
Ether, uses of ... ... ... 441
Europe, age to send child to ... 15
European infant mortality Chap. I
Evacuations, disinfection of ... 146
Examination, of milk ... ... 59
of sick children ... ... 157
Excitability, nervous ... 19, 158
Exercise of pregnant woman ... 26

| | PAGE |
|---|---|
| Exercise, of wet nurse ... | 46 |
| of children ... | 113 |
| Exhaustion of fevers ... | 179 |
| effect on brain ... | 345 |
| Expectorants ... | 448, 462 |
| Expression in sickness ... | 158 |
| Eye affections ... | 382 |
| prevention of ... | 151 |
| season of prevalence ... | 129 |
| Eyes, care of, during bathing ... | 29 |

F

| | |
|---|---|
| Face, paralysis of ... | 390 |
| Farinaceous foods | 65, 81, 94, 99 |
| Fatality of disease, order of ... | 129 |
| February, health of ... | 125 |
| Feeding, artificial ... | 91 |
| promiscuous ... | 82, 152 |
| too frequent ... | 97 |
| of tongue-tied ... | 37 |
| in fevers ... | 179 |
| when cleft-palate ... | 38 |
| Feeding-bottle ... | 52 |
| Feet, cold ... | 157 |
| Fever, generally considered ... | 170 |
| principles of treatment ... | 172 |
| classification ... | 182 |
| cause of non-recurrence ... | 136 |
| continued ... | 182 |
| ardent ... | 187 |
| typhoid or enteric ... | 190 |
| prevention of ... | 148 |
| remittent ... | 200 |
| intermittent ... | 205 |
| rheumatic ... | 234 |
| cerebro-spinal ... | 237 |
| Fevers, the eruptive ... | 211 |
| prevention of ... | 147 |
| malarial ... | 142 |
| seriousness ... | 208 |
| developed by chills ... | 124 |
| Filters and filtration ... | 72 |
| First day of life ... | 28 |
| Fish bones swallowed ... | 413 |
| Flannel clothing ... | 111 |
| Flatulence ... | 319 |
| Fomentations ... | 438 |
| Fontanelle ... | 159 |
| Food (*see* Diet and Feeding). | |

| | PAGE |
|---|---|
| Food, of newly born ... | 31, 93 |
| classification ... | 55 |
| as affected by climate | 21, 299 |
| thickening of ... | 81 |
| spreading of disease through | 136, 145, 149, 153 |
| Foods (*see* Farinaceous). | |
| intermediate or malted | ...67, 94 |
| Foreign substances, swallowed ... | 412 |
| in ear and nose ... | 414 |
| in air passages ... | 413 |
| Fractures ... | 407 |
| Frights, dangers of ... | ...27, 46 |
| Fruits, allowable ... | 103 |
| substitute for aperients ... | 449 |
| Fumigation ... | 138 |

G

| | |
|---|---|
| Gastric fever ... | 190 |
| juice ... | 69 |
| vomiting ... | 162 |
| Gelatine solution ... | 92, 453 |
| German measles ... | 155, 216 |
| Germs of disease ... | 135 |
| Glycerine enema ... | 295, 447 |
| Goat's milk ... | 58 |
| Godfrey's cordial ... | 435 |
| Grey powder ... | 435 |
| Groin rupture ... | 417 |
| Growth, weight, and height ... | 82 |
| Gums, lancing of ... | 79 |

H

| | |
|---|---|
| Hand, wound of palm of ... | 396 |
| Hand-feeding (*see* Artificial Feeding). | |
| "Hardening," system of ... | 113 |
| Head, injuries of ... | 410 |
| Head symptoms ... | 344 |
| simulated ... | 333, 346 |
| cry of child, as a sign of ... | 159 |
| Headache ... | 181 |
| Heart disease ... | 235, 284 |
| Heat, essential to newly-born | 28, 31, 42 |
| infantile capacity to bear ... | 113 |
| of the body ... | 168 |
| Heat-stroke ... | 362 |

| | PAGE |
|---|---|
| Heat-stroke, prevention of | 151 |
| Height at various ages | 83 |
| Herpes | 376 |
| Hills, effects of residence in | 23 |
| Hindu infant mortality | 9 |
| Hot climate, effects of | 19 |
| Hygiene, general | 110 |
| of pregnant woman | 26 |
| Hydrometer | 59 |
| Hydrophobia | 405 |

I

| | |
|---|---|
| Ice to the head | 177 |
| Impressions, maternal | 26 |
| Incised wounds | 394 |
| Incontinence of urine | 370 |
| Infection | 135 |
| Inflammation of brain | 345 |
| chest | 274 |
| ears | 387 |
| eyes | 382 |
| kidneys | 368 |
| mouth | 243 |
| within abdomen | 296, 316 |
| Inflammatory croup | 256 |
| diarrhœa | 307 |
| Influenza | 238 |
| Inoculation | 104 |
| Intermediate foods | 67, 94 |
| Intermission | 182 |
| Intermittent fever | 205 |
| prevention of | 142 |
| Intestinal worms | 324 |
| prevention of | 152 |
| Inunctions | 178 |
| Ipecacuanha | 310, 446 |
| Irritant poisons | 419 |
| Itch | 377 |

J

| | |
|---|---|
| January, health of | 124 |
| Jaundice | 336 |
| Juice of raw meat | 454 |
| July, health of | 127 |
| June, health of | 126 |

| | PAGE |
|---|---|
| K | |
| Kidneys, inflammation of | 368 |
| Koorchi, extract of | 309 |

L

| | |
|---|---|
| Lacerated wounds | 396 |
| Lactation, too prolonged | 86 |
| Lactometer | 59 |
| Lancing the gums | 79 |
| Leeches | 437 |
| Liebig's food for infants (*see* Intermediate Foods). | |
| Ligature of an artery | 393 |
| navel string | 29 |
| Light | 120 |
| Lime, purification of water by | 73 |
| chloride of | 139 |
| saccharated solution of | 100, 453 |
| Lime-water | 453 |
| use of | 80, 92, 95 |
| Linen clothing | 112 |
| soiled | 119 |
| Litmus paper, use of | 61 |
| Liver, affected by chills | 22 |
| diseases of | 336 |
| Lockjaw, infantile | 13, 19, 41, 118, 356 |
| Lung, inflammation of | 274 |

M

| | |
|---|---|
| Mahommedan infant mortality | 9 |
| Malaria | 142 |
| Malarial diseases | 200, 205 |
| consequences of | 208 |
| Malted foods (*see* Intermediate Foods). | |
| Management, general effects of | 14 |
| of the cord | 30, 40 |
| of infant at birth | 28 |
| of mother's health | 25 |
| of recent mother | 43 |
| of wet-nurse | 50 |
| of sick room | 137 |
| March, health during | 125 |
| Maternal impressions | 26 |
| Mattress, disinfection of | 139 |
| May, health during | 126 |

PAGE

Measles ... ... ... ... 211
prevention of ... 147, 154
complicated with diphtheria 268
German ... ... 155, 216
Measly pork ... ... ... 153
Measures and Weights ... ... 467
Meat, when allowable ... 82, 101
Mellin's food (*see* Intermediate Foods).
Menstruation during suckling ... 47
in proposed nurse ... ... 50
Mental shocks, effects upon milk 46
Mercury ... ... ... ... 435
Milk ... ... ... ... 57
condensed ... ... ... 93
woman's, compared ... 57
ass's ... ... ... ... 57
cow's ... ... ... 58, 61, 92
goat's ... ... ... 58
for the journey ... ... 62
examination of ... ... 59
curdling of ... ... 61, 80, 92
boiled ... ... ... 62
disease propagated by 71, 149, 261
a test of goodness ... ... 49
quality varies with time 49, 55, 64
effects of insufficiency ...88, 94
peptonised ... ... 98, 454
when it disagrees ... ...52, 97
tablets ... ... ... 95
when dilution may cease ... 100
quantity consumed ... 63
first breast milk all-sufficient ... ... ... 32
sterilization of ... ... 62
Milk-diet in malarial debility ... 209
Mindererus, spirits of ... ... 444
Mining districts, infant mortality in ... ... ... 12
Mixed races, infant mortality of 9
Modified small-pox ... ... 230
Mouth, health of each ... ... 124
Mortality, among soldiers' children ... ... ... ... 5
in hills ... ... ... 23
compared ... .. 3, 7, 9, 129
of unsuckled ... ... 88
town and country ... ... 117
according to age in India... 130
due to defective feeding 65, 152
in London, of artificially fed 89

PAGE

Mortality, ought to be low in India ... ... ... .. 14
Mosquito larvæ in water ... 72
Mother's health ... ... ... 25
diet while nursing ... ... 45
milk, deprivation of ... 87
Mouth, affections of ... ... 240
inflammation of ... ... 243
examination of ... ... 165
Mucus in bowel motions 160, 289, 325
Mudar ... ... ... ... 446
Mumps ... ... ... 154, 270
Muscles, condition of ... ... 157
Mustard emetic ... ... ... 445
plasters ... ... ... 436
bath ... ... ... .. 439

N

Napkins, soiled ... ... ... 119
Nature of sickness in India ... 123
Navel rupture ... ... ... 417
Navel-string, management of ...29, 40
bleeding from ... ... 37
Neglect, results of, in India ... 15
Nestle's food ... ... ... 94
Nettle-rash ... ... ... 373
Neurotic poisons ... ... 419
Night-clothing ... ... ... 113
Night-cough ... ... ... 273
Nipples, retraction of ... ... 48
Nitre ... ... ... ... 443
sweet spirits of ... 441, 443
Nose, foreign substances in ... 414
November, health of ... ... 128
Nurse, selection of ... ... 49
Nurseries ... ... ... ... 117
Nursing, compared with other methods of rearing ... ... 88
Nursing ... ... ... ... 43
periods of ... 30, 40, 44, 64
duration of ... ... 47, 85
improper ... ... 44, 86
unfitness for ... ... 47
Nutritive enemata ... ... 447

O

Obstruction of bowels ... ... 295
October, health during ... ... 128

| | PAGE |
|---|---|
| Oil frictions ... ... ... | 178 |
| Ophthalmia ... ... | 29, 382 |
| prevention of ... ... | 151 |
| Opiates ... ... ... ... | 435 |
| Opium enema, caution as to ... | 448 |
| Organic matter in air ... ... | 116 |
| Orphan Asylum in Calcutta ... | 8, 17 |
| Over-crowded nurseries... ... | 117 |
| Over-feeding ... ... ... | 97 |
| Over-heated bath ... ... | 122 |

P

| | |
|---|---|
| Palate, artificial ... ... ... | 39 |
| Peptonised milk ... ... | 98, 454 |
| Paralysis, infantile ... ... | 358 |
| of diphtheria ... ... | 268 |
| of the face ... ... ... | 390 |
| arasites, intestinal (*see* Worms). | |
| in thrush ... ... ... | 240 |
| in itch ... ... ... | 377 |
| in ringworm... ... ... | 378 |
| Paregoric elixir ... ... ... | 448 |
| Particles, contagium ... ... | 135 |
| Pasteur's treatment of hydrophobia ... ... ... ... | 405 |
| Patent medicines ... ... | 435 |
| Pemphigus ... ... ... | 380 |
| Periodicity of agues ... ... | 206 |
| Perspiration of children ... | 443 |
| Pin swallowed ... ... ... | 413 |
| Pitting of small-pox ... ... | 229 |
| Play of children... ... ... | 115 |
| Pneumonia ... ... ... | 278 |
| Poisoning, accidental ... ... | 419 |
| Poisonous air ... ... ... | 116 |
| Poisons, classification of ... | 419 |
| table of ... ... ... | 422 |
| Potassium, bromide of ... ... | 440 |
| Potatoes, when allowable ... | 101 |
| Poultices ... ... ... ... | 437 |
| Pregnancy, mother's health during ... ... ... ... | 25 |
| opposed to nursing... ... | 48 |
| Prescriptions ... ... ... | 456 |
| Prevention of diseases ... ... | 141 |
| Prickly heat ... ... ... | 375 |
| Principles of diet ... ... | 54 |
| Promiscuous feeding .. | 82, 152 |
| Propagation of disease... ... | 134 |

| | PAGE |
|---|---|
| Protrusion of bowel ... ... | 318 |
| Pulse ... ... ... ... | 162 |
| Punctured wounds ... ... | 397 |
| Purgatives ... ... | 449, 463 |
| in fevers ... ... ... | 180 |
| Purging of blood ... ... | 39 |
| Purification of water ... ... | 72 |

Q

| | |
|---|---|
| Qualifications of wet nurse ... | 49 |
| Quarantine ... ... ... | 154 |
| Quinine, administration of | 202 207 |
| when not to give ... | 185, 202 |
| Quinsy ... ... ... .. | 249 |

R

| | |
|---|---|
| Raw meat... ... ... ... | 454 |
| Rearing, various methods of, compared ... ... ... | 87 |
| of children of the poor ... | 152 |
| Receipts, alimentary ... ... | 453 |
| Red gum ... .. ... ... | 373 |
| Refrigerants ... ... | 450, 464 |
| Remedies, administration of ... | 434 |
| Remission... ... ... ... | 182 |
| Remittent fever ... ... ... | 200 |
| infantile ... ... ... | 190 |
| Respiration, artificial ... ... | 35 |
| in childhood ... ... | 163 |
| abdominal ... ... ... | 161 |
| cutaneous ... ... ... | 120 |
| effect of climate upon the... | 22 |
| products of ... ... ... | 116 |
| Responsibility, individual ... | 11 |
| Rest essential to newly born ... | 28 |
| after meals ... ... ... | 102 |
| in fevers ... ... ... | 178 |
| Rheumatic fever... ... .. | 234 |
| Rhubarb ... ... ... ... | 449 |
| Rickets .. ... ... ... | 89 |
| Riding exercise ... ... ... | 115 |
| Ringworm... ... ... | 156, 378 |
| Room, disinfection of ... ... | 138 |
| Round-worms ... ... | 324, 328 |
| prevention of ... ... | 152 |
| Rupture ... ... ... ... | 417 |

PAGE

S

Saccharated solution of lime 100, 453
Salt in food ... ... ... 102
Salts of food ... ... ... 56
Scalds ... ... ... ... 397
Scalp swellings at birth ... 36
Scarlatina ... ... ... 217
prevention of ... 147, 154
Schools, quarantine rules for ... 154
Scorbutic bowel complaints ... 150
Scurvy in infants ... ... 94
Season for vaccination ... ... 108
clothing for each ... ... 112
peculiarities of ... ... 110
healthiness of each... ... 124
sickness according to ... 123
Seeds of disease ... ... ... 135
Sedatives ... ... ... 440, 457
Senna ... ... ... ... 449
September, health of ... ... 127
Shingles ... ... ... ... 376
Sick children, examination of ... 157
Sickness according to age ... 130
according to season ... 124
of India and England compared ... ... ... 129
Sick-room, disinfection of ... 138
Skin, yellow coloration of ... 42
in sickness ... ... ... 165
diseases of the ... ... 373
Sleep of newly born ... ... 30
of children ... ...113, 115, 159
Sleeplessness ... ... 181, 440
Slime in the stools (*see* Mucus).
Small-pox ... ... ... 223
prevention of ...148, 154, 155
effects of vaccination upon 106
Snake bites ... ... ... 402
"Soothing" medicines ... ... 435
Spasmodic cough ... ... 273
Spleen, enlargement of ... ... 208
Splints (*see* Fractures).
Sponging the body ... ... 176
Sprains ... ... ... ... 400
Spreading of disease ... ... 134
Spurious head symptoms 333, 346
Statistics of child life in India Chap. I.
of various methods of feeding ... ... ... 88

PAGE

Statistics, vaccination ... ... 105
of disease according to age 130
according to season ... 123
Sterilisation of milk .. ... 62
Sticking plaster, how to apply 395
Still-born ... ... ... ... 34
Stimulants ... ... 450, 465
during nursing ... ... 46
in fevers ... ... 181, 203
alcoholic ... ... 103, 459
Stings of insects ... ... ... 404
Suckling (*see* Nursing).
Sugar ... ... ... 93, 103
Sugar of milk ... ... ... 64
Sulphur for disinfection ... 140
Sulphonal... ... ... ... 440
Sun-fever ... ... ... ... 187
Sun-stroke ... ... ... 362
causes and prevention ... 151
Sun-set, exercise before and after ... ... ... 115, 127
Swallowing foreign substances 412
Swellings of the scalp ... ... 36
Swiss milk ... ... ... 94

T

Table of poisons... ... ... 422
Tannin wine ... ... ... 451
Tape-worms ... ... 325, 329
prevention of ... ... 152
Tea for children ... ... ... 103
Tears in infancy ... ... 159
Teeth, a guide to diet ... 80, 85
Teething ... ... ... ... 74
constitutional influence of 77
management during ... 78
diarrhœa during ... ... 78
Temper, control of ... ... 27
Temperature, effects upon milk 61
effects upon food .. 21, 299
of body ... ... ... 168
of bath ... ... 28, 122, 439
in disease (*see* also each disease) ... ... ... 168
Tests for milk ... ... ... 59
Thermometer .. ... ... 166
Thickening of food ... ... 81
Thirst of pregnant women ... 46
of children ... ... ... 68

| | PAGE |
|---|---|
| Thread-worms ... ... | 324, 328 |
| prevention of ... ... | 152 |
| Throat, affections of ... ... | 249 |
| respiration in ... ... | 163 |
| foreign substances in ... | 413 |
| applications to ... ... | 438 |
| Thrush ... ... ... ... | 240 |
| Tongue in sickness ... ... | 164 |
| Tongue-tied ... ... ... | 37 |
| Tonics ... ... ... | 451, 465 |
| Tonsillitis ... ... ... | 249 |
| Tonsils, enlargement of ... | 250 |
| Tourniquet ... ... ... | 393 |
| Towns, infant mortality of ... | 117 |
| Tracheotomy .... ... | 259, 267 |
| Truss ... ... ... ... | 418 |
| Turpentine stupes ... ... | 438 |
| Typhoid fever ... ... ... | 190 |
| prevention of ... | 148, 155 |
| Typhoid symptoms ... | 181, 203 |

U

| | |
|---|---|
| Unnatural conditions at birth... | 34 |
| Urine, first appearance of ... | 33 |
| as a symptom ... ... | 161 |
| incontinence of ... ... | 370 |
| effects of liver derangement on ... .. ... ... | 342 |

V

| | |
|---|---|
| Vaccination ... ... ... | 104 |
| Vapour bath ... ... ... | 438 |
| Variety in diet ... ... | 100, 101 |
| Vegetables essential as food | 45, 51 |
| when allowable for child | 101, 102 |
| Vein, wound of a ... ... | 394 |
| Ventilation ... ... ... | 116 |
| of lying-in chamber | 31, 41 |
| Ventilation in treatment of fevers ... ... ... ... | 179 |
| Vernix caseosa ... ... ... | 29 |
| Violet powder ... ... ... | 437 |
| Viruses of diseases ... ... | 135 |
| Vitiated air ... ... ... | 116 |
| Vomiting ... ... ... ... | 332 |
| as a symptom ... | 97, 161, 181 |
| of blood ... ... ... | 39 |

W

| | |
|---|---|
| Warmth of infant ... | 28, 31, 42 |
| Warnings of over-lactation ... | 86 |
| of convulsions ... ... | 350 |
| Washing of infant ... | 28, 40 |
| Wasting ... ... ... ... | 141 |
| Water ... ... ... ... | 68 |
| contamination of ... ... | 71 |
| purification of ... ... | 72 |
| diseases spread through | 70, 72, 136, 142, 145, 152 |
| on the brain... ... ... | 348 |
| Weaning ... ... ... ... | 85 |
| food at ... ... | 81, 101 |
| Weight and growth ... ... | 82 |
| Weights and Measures... ... | 467 |
| Wet-nurse, selection of... ... | 49 |
| Wet pack... ... ... ... | 176 |
| Whey, white wine ... ... | 454 |
| Whooping-cough ... ... | 285 |
| prevention ... ... ... | 148 |
| Wine, St. Raphael's Tannin .. | 451 |
| Worms, intestinal ... ... | 324 |
| prevention of ... ... | 152 |
| Wounds ... ... ... ... | 394 |

Z

| | |
|---|---|
| Zinc emetic ... ... ... | 446 |


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